



Department Application
Bronze and Silver Award



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|---|----------------------------|----------------------|
| Name of institution | University of Cambridge | |
| Department | Faculty of Mathematics | |
| Focus of department | STEMM | |
| Date of application | 30 April 2017 | |
| Award Level | Silver | |
| Institution Athena SWAN award | Date: November 2013 | Level: Silver |
| Contact for application Must be based in the department | Professor Anne Davis | |
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The Faculty of Mathematics aims include:

- advancing mathematical knowledge by novel and insightful research that is world-leading and has international impact;
- training the next cohort of mathematicians for academia, education, science, industry, business and society.

Glossary

| | |
|---------------------|--|
| CCA | Cambridge Centre for Analysis (4 year PhD Programme) |
| CDT | Centre for Doctoral Training |
| CMS | Centre for Mathematical Sciences |
| CTO | College Teaching Officer |
| 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 |
| E & D | Equality and Diversity |
| ENS | Emmy Nöether Society |
| HoD | Head of Department |
| KTF | Knowledge Transfer Facilitator |
| MASt | Masters in Advanced Studies (stand-alone course): A one-year Master's course taken by students from outside 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 |
| MMP | Millennium Mathematics Project |
| MUAC | Mathematics Undergraduate Admissions Committee |
| Part III | The one year programme of courses shared by students for either MMath or MASt |
| PI | Principal Investigator |
| PMP | Post-Masters Placement Scheme |
| PPD | Personal and Professional Development |
| PRES | Postgraduate Research Experience Survey |
| PSS | Professional and Support Staff |
| PTES | Postgraduate Taught Experience Survey |
| SAP | Senior Academic Promotions |
| SPACE | Supporting Parents and Carers @ Cambridge |
| SPL | Shared Parental Leave |
| SRA | Senior Research Associate |
| STEMM | Science, Technology, Engineering, Mathematics and Medicine |
| STEP | Sixth Term Examination Paper |
| STFC | Science and Technology Facilities Council |
| SUROP | Summer Undergraduate Research Opportunities Programme |

Total word count: 12,576 (extra 1000 words used in Sections 4 & 5)

Section 1: 573 words

Section 2: 343 words

Section 3: 311 words

Section 4: 3541 words

Section 5: 6897 words

Section 6: 911 words

1. LETTER OF ENDORSEMENT FROM THE HEAD OF DEPARTMENT

Recommended word count: Bronze: 500 words | Silver: 500 words

573 words



**UNIVERSITY OF
CAMBRIDGE**

Faculty of Mathematics

**Professor Gabriel Paternain
Professor Nigel Peake**

As Heads of the two Cambridge Mathematics Departments, we are proud of the real and continuing change in the Faculty over the last 5 years. We believe the Athena SWAN process to be a matter of the highest priority, which has been integral to driving forward equality initiatives in both Departments. We have worked together as part of the Athena SWAN Committee to both lead and actively promote actions to redress gender imbalances at all career stages. We are fortunate to be supported by outstanding colleagues who are advocating equality not just in our Departments but across the School, University and in the Colleges. Professor Anne Davis is the University Gender Equality Champion for STEM, Dr Stephen Eglon is the School of Physical Sciences Equality Champion, Dr Stephen Cowley and Dr Orsola Rath Spivack are leading on implementing change in undergraduate admissions both within the Faculty and in collaboration with the Colleges, and the new DPMMS Administrator, Dr Vivien Gruar, has brought tremendous expertise into the Faculty from her previous equality and diversity role.

We have made a series of major financial commitments to address gender representation including support for academic and research positions both within the Departments and in conjunction with Murray Edwards and Newnham Colleges. In addition, we are funding the Faculty Admissions Officer, who coordinates equality and diversity activities and focusses on undergraduate admissions, including a new committee which oversees the review of all student data and working in collaboration with the Colleges.

We are delighted with the increases in the proportion of women across all staff career stages particularly at the researcher level in the Faculty over the last five years. We are particularly proud of the 100% successful promotion rate for women Academics in DAMTP and by the successful recruitment of the new Corfield Lecturer in DPMMS. This University Lectureship, made possible by a new endowment and a partnership with Murray Edwards College, has an explicit role in developing the position of women in Mathematics. A second such position, this time in DAMTP and in collaboration with Newnham College, has attracted a large and strong field of applicants, and we will be making an appointment in May 2017. A third such position, in collaboration with yet another Cambridge College, is in the late stages of discussion and we expect to advertise this post soon. These three new positions are key not only to securing world class academics but also in providing role models for current and prospective female students.

The difference in attitudes between the 2014 and 2016 student surveys we feel provides real evidence of the culture change in the Faculty. Our students are more willing to highlight unacceptable behaviour and there is a clear recognition by male students of the challenges faced by their female peers.

Although we have much to celebrate, there is still a long way to go. Despite a significant increase in activities designed to attract and support female undergraduates, admission numbers remain lower than comparative institutions. One focus of our Silver Action Plan is clearly on undergraduate admissions and performance and we will need to be bold and innovative in pursuing initiatives that can truly effect change. We are all absolutely committed to continuing to work hard to attract and retain women at all levels and to maintaining the current momentum for generating an inclusive and diverse environment for study and work. These efforts will be at the heart of everything we do.

Professor Gabriel Paternain
Head of Department, DPMMS

Professor Nigel Peake
Head of Department, DAMTP

2. DESCRIPTION OF THE DEPARTMENT

Recommended word count: Bronze: 500 words | Silver: 500 words

343 words

Please provide a brief description of the department including any relevant contextual information. Present data on the total number of academic staff, professional and support staff and students by gender.

- The Faculty of Mathematics has two departments, Pure Mathematics and Mathematical Statistics (DPMMS) and Applied Mathematics and Theoretical Physics (DAMTP). The Statistical Laboratory is a sub-department of the DPMMS. The Faculty sits in the School of Physical Sciences, one of six Schools across the University.
- The Departments are located at the Centre for Mathematical Sciences (CMS), alongside the Isaac Newton Institute for Mathematical Sciences (INI), a national and international visitor research institute and the Betty and Gordon Moore Library (BGML), containing the University Library's holdings in mathematical sciences (Figure 1).
- The Faculty comprises ~90 academic staff, over 90 research staff and 210 PhD students (Figure 2). The Faculty of Mathematics is supported by a comprehensive shared services structure which has five teams dedicated to supporting the joint operations of HR, Facilities, IT, Undergraduate Education and Graduate Education, overall >65 Professional and Support Staff (PSS).

Figure 1: The Centre for Mathematical Sciences was built in the 1990s. It is made up of seven pavilions; a central social building; the circular Betty and Gordon Moore Library, home to the Stephen Hawking archive; and a gatehouse that forms a dramatic entrance to a new contemporary Cambridge courtyard.

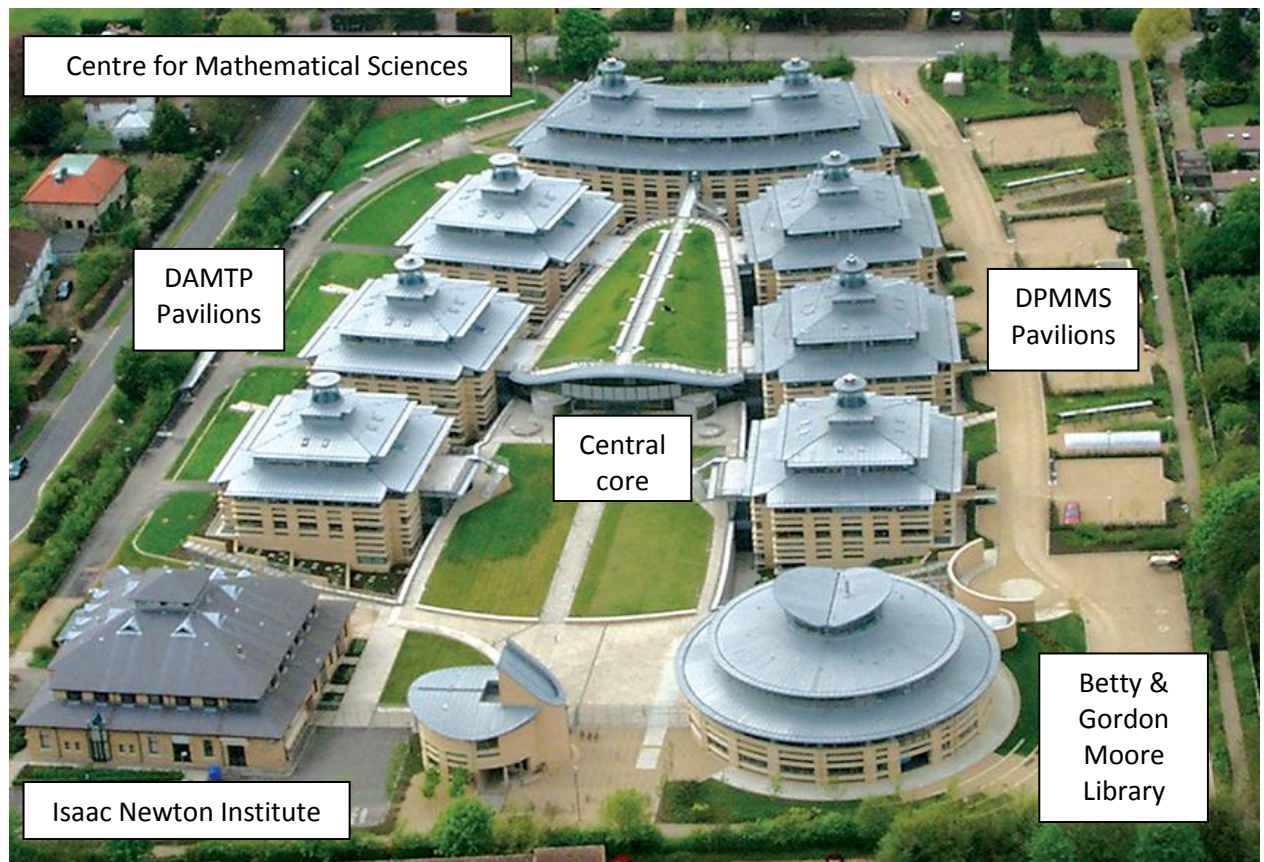
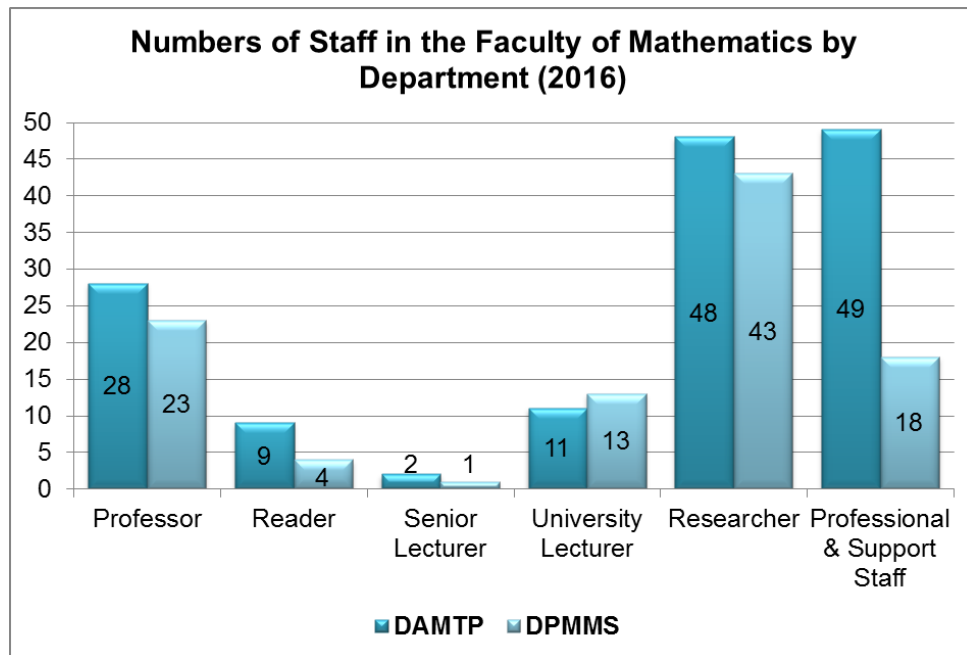


Figure 2 illustrates the comparative sizes of the two Departments with the major difference being in the number of professional and support staff who are based in DAMTP as part of the Faculty Shared Services.



- The undergraduate mathematics course admits around 250 students per year. As with other undergraduate courses in Cambridge, lectures and examinations are provided centrally by the Faculty while supervisions (small group teaching) are provided by the 31 individual Colleges. It is the Colleges, not the Faculty, which control admissions.
- Postgraduate Study in Mathematics includes the Master of Mathematics (MMath, Year 4 for undergraduates) and the Master of Advanced Study (MASt) which is a one-year taught course. These are taught together as one course with ~250 students per annum. There are a range of PhD programmes hosted in the Faculty (Figure 3).

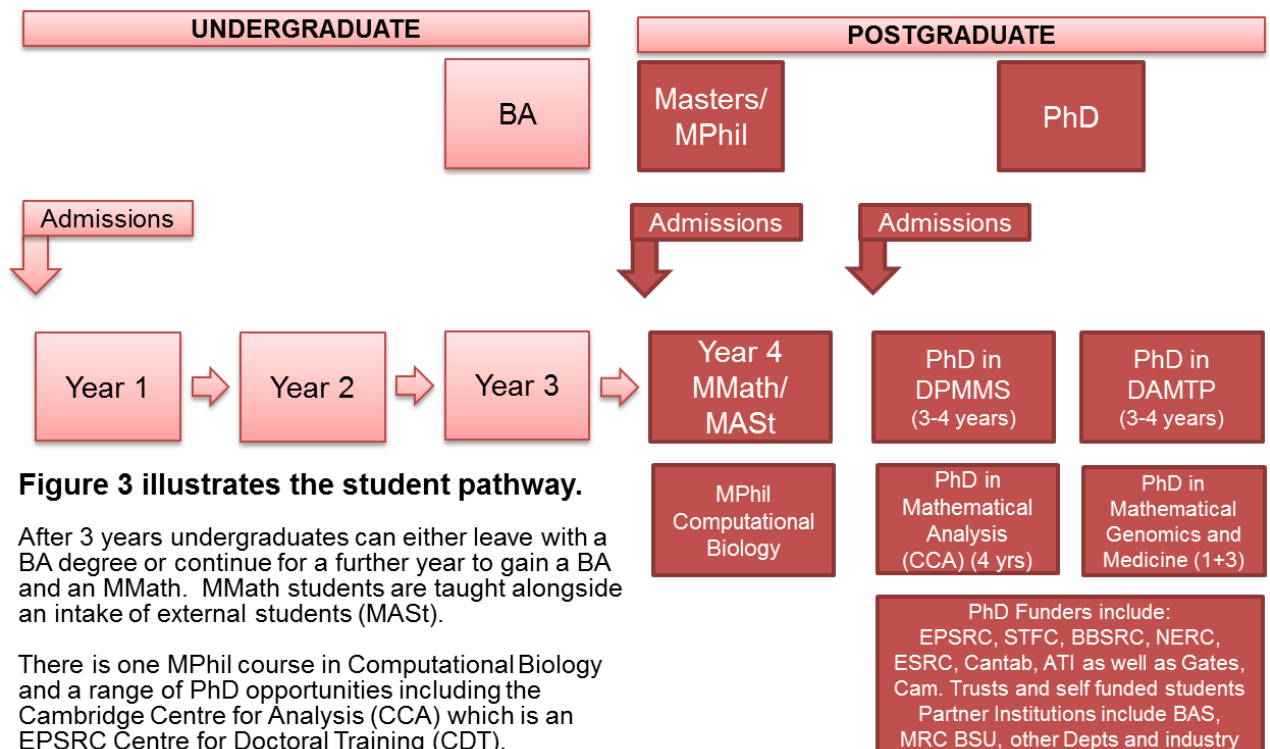


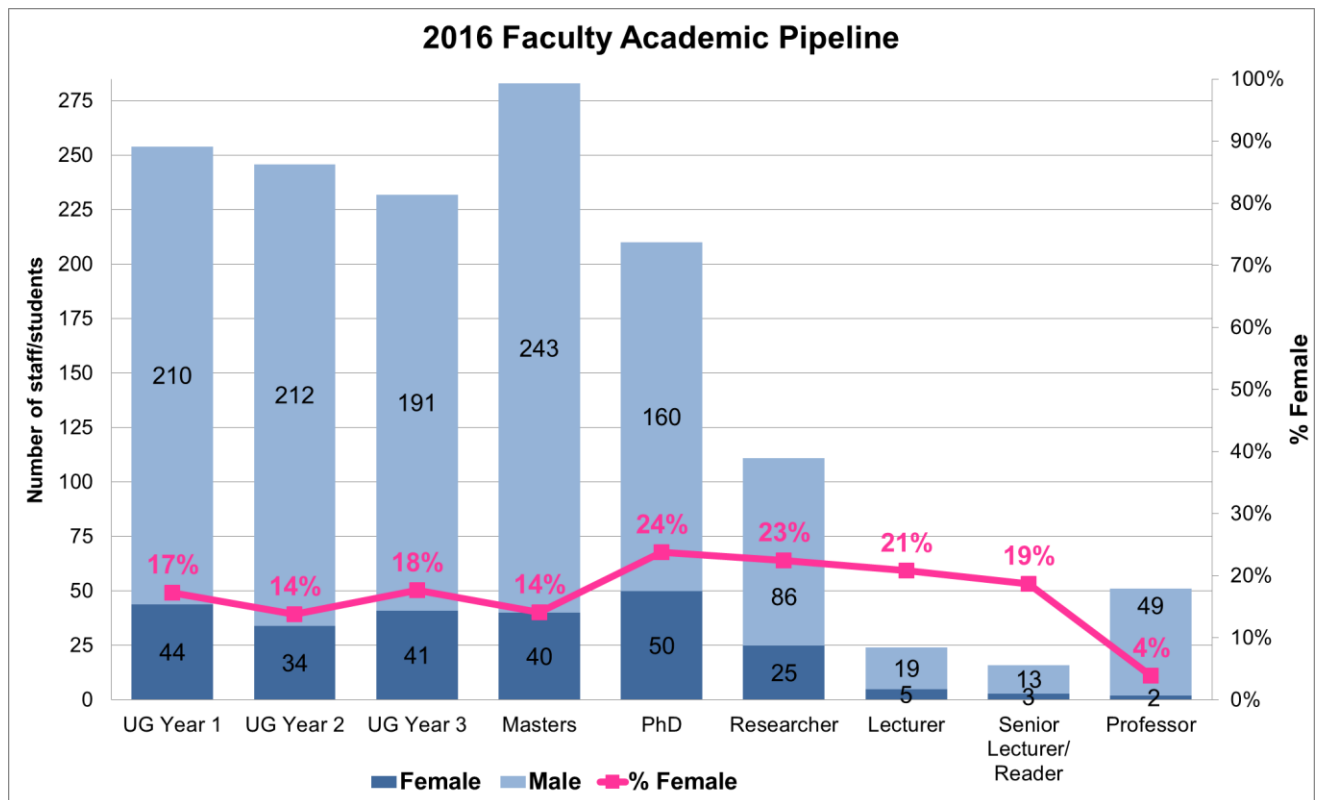
Figure 3 illustrates the student pathway.

After 3 years undergraduates can either leave with a BA degree or continue for a further year to gain a BA and an MMath. MMath students are taught alongside an intake of external students (MASt).

There is one MPhil course in Computational Biology and a range of PhD opportunities including the Cambridge Centre for Analysis (CCA) which is an EPSRC Centre for Doctoral Training (CDT).

- The gender balance in the Faculty is male-dominated (Figure 4) as is seen in all the physical sciences both nationally and internationally.

Figure 4: In 2016/17, women make up between 14% and 18% (n=232-283) of the Undergraduate and Masters' student populations. The proportion then increases at the PhD student level (24%, n=210). At the Academic level, the proportion of female staff remains fairly constant across Lecturers (21%, n=24) and Senior Lecturers/Readers (20%, n=15) and reflects the feeder researchers group (23%, n=91). At the Professor level the proportion of female staff (4%, n=46) drops off dramatically.



- Over the course of the application we will highlight the issues identified by data analyses, actions to date, the impact of those actions and future actions as part of the Silver action plan. All student data is at 31st December each year and staff data at a census date of 31st July except for Figure 4 above and Section 4.2 where we have reflected the status as at 31st December 2016 (to include significant new appointments).

3. THE SELF-ASSESSMENT PROCESS

Recommended word count: Bronze: 1000 words | Silver: 1000 words

311 words

Describe the self-assessment process. This should include:

- (i) a description of the self-assessment team

Table 1: Members of the Athena SWAN Committee (self-assessment team/SAT) by gender and role in the submission preparation.

| Name/job title | Role | M /F | Dept | Working Group |
|---|---|------|-----------|--|
| Dr Nick Bampos, Assistant Director of Research and Deputy Head of Department. | School of Physical Sciences Gender Champion and Chair of Chemistry Athena SWAN SAT. One of four University Equality Champions and a member of the University E&D Committee. | M | Chemistry | School of Physical Sciences Athena SWAN buddy |
| Professor Nathanael Berestycki, Professor of Mathematics | Faculty member since 2007. He has a five-year old child and shares parental duties with his partner. | M | DPMMS | Organisation & Culture |
| Dr Stephen Cowley, Senior Lecturer | Elected member of University Council. Member of University HR Committee. Married, from a dual-career family, with two children at university. Former member of the Parents Committee of the University Nursery. | M | DAMTP | Student data, Organisation & Culture |
| Professor Anne Davis, Professor of Mathematical Physics (Chair) | University Gender Equality Champion and Chair of the Athena SWAN SAT. Member of the University E&D committee and Gender Equality Steering Group. She has an adult daughter. | F | DAMTP | Key career transition points |
| Dr Giulio Del Zanna, Senior Research Associate | Faculty member since 2008. 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. | M | DAMTP | Researchers |
| Professor Nick Dorey, Professor of Theoretical Physics | Has two small children and does the school run each morning before coming to the department. | M | DAMTP | Key career transition points |
| Dr Stephen Eglen, Reader School of Physical Sciences Equality Champion | Has three young children and shares childcare duties with his partner, a computational neuroscientist. | M | DAMTP | Organisation & culture |
| Dr Vivien Gruar, Departmental Secretary | Previously E&D Consultant and Athena SWAN Coordinator for the University. | F | DPMMS | Staff data, Flexible working & Career breaks, Organisation & Culture |
| Sarah Jefferys, Faculty Administrator | Recently appointed to the new post of Faculty Administrator. She works part-time and has two young children who both attended the University nursery | F | DAMTP | Flexible working & Career breaks, Career development |

| | | | | |
|--|---|---|-------|---|
| Dr Anastasia Kisil, Research Fellow/College Lecturer at Corpus Christi College | Has a four year old daughter, born during a PhD also at DAMTP. She shares the responsibility of looking after her daughter with her husband, a Postdoc in DPMMS. | F | DAMTP | Career development, Researchers |
| Professor Gabriel Paternain, Professor of Mathematics | Head of Department of DPMMS. He has one child and shares parental duties with his wife who is a statistician. | M | DPMMS | Staff data |
| Faith Payne, PA to the Departmental Administrator | She has two school aged boys and works part-time, working hours in between the morning and afternoon school runs. | F | DAMTP | - |
| Professor Nigel Peake, Professor of Applied Mathematics | Head of Department of DAMTP. He has five children, ranging in ages from 9 to 20, and shares parenting duties with his wife. | M | DAMTP | Staff data |
| Ellen Powell, PhD student in the Cambridge Centre for Analysis | Student member of the Athena SWAN committee. She was president of the Emmy Nöether Society for Women in Maths at Cambridge, and is still an active member of the society. | F | DPMMS | Student data |
| Dr Orsola Rath Spivack, Senior Research Associate and Affiliated Lecturer in DAMTP, and Director of Studies in Lucy Cavendish College (an all-female College). | Faculty Admissions Officer and one of two E&D contacts in the Faculty. Faculty Athena SWAN coordinator (part-time) since 2013. She held a Daphne Jackson Fellowship in DAMTP, following a career break after the birth of her second child. | F | DAMTP | Student data, Organisation & Culture, Researchers |
| Professor Richard Weber, Professor of Mathematics for Operational Research | Chair of Faculty Board (2014-2016). On Sabbatical Leave for 2016-17 | M | DPMMS | - |
| Professor Neshan Wickramasekera, Professor of Mathematics | Married to a medical doctor with whom he raises their young child. | M | DPMMS | Key career transition points |

(ii) an account of the self-assessment process

- The Bronze self-assessment team (SAT) was formed early in 2012 to consider the progression of gender equality across the Faculty leading to the first submission in November 2013. This Committee has been refreshed and has met regularly (every 1-3 months) since then.
- The frequency of meetings increased to monthly in the run up to the Silver submission, with working groups taking specific responsibility for sections of the form.
- Both Heads of Department play active roles on the SAT.
- The Faculty financially supports the Athena SWAN coordinator and Faculty administrator posts with specific part-time Athena SWAN roles.
- The SAT organised a student survey in 2016 to evaluate students' perceptions of gender issues in mathematics as a follow up from a baseline 2014 survey. There was a 37% response rate in 2016, of which 22% female, 76% male, and 2% non-binary or 'preferred not to say' (2014 response was 41%; 24% female, 75% male, 1% other).

- The SAT supported the analysis of the School of Physical Sciences Staff Survey in 2015 (56% response rate, N=161, 26% Female).
- Members of the SAT ran a series of focus groups in 2017 across a range of staff groups including researchers, College Teaching Officers, IT team, technicians and facilities staff. 36 attendees in total (22% female). The focus group for researchers and College Teaching Officers were chosen in such a way to reproduce the same ratio of gender and position as in the Schools staff survey of 2015 (30% female).
- Regular Athena SWAN reports are provided for the Faculty Board, for the Faculty Undergraduate Admissions Committee, and at Termly Staff meetings as well as to the School E&D forum and the central University E&D Section.
- The Silver Action Plan was circulated across the Faculty including at both Departmental Staff meetings. As well as securing wider approval, feedback from key committees and individuals was incorporated into the final plan.

(iii) plans for the future of the self-assessment team

SILVER ACTIONS

20. To continue embedding of Athena SWAN in Faculty

20.1 The Athena SWAN Committee will meet at least termly to ensure progression of the action plan. Oversight of implementation will be the responsibility of working groups, each with specific areas of focus.

20.2 Membership will be refreshed and a new Chair elected by start of 2017/18 academic year. Terms of reference for the committee will be amended to ensure a member of the Emmy Nöether Society is always included.

20.3 The panel will provide regular updates at Staff Meetings, an annual report to the Faculty Board and to the School and University Equality and Diversity Forums.

15. To collect feedback from all staff groups

15.1 Faculty staff survey run in 2018 to seek feedback on key areas.

5. To collect and review Student feedback

5.1 Repeat Faculty Athena SWAN student survey

5.2 Encourage participation in National and Faculty course specific surveys

4. A PICTURE OF THE DEPARTMENT

Recommended word count: Bronze: 2000 words | Silver: 2000 words

3541 words

4.1. Student data

If courses in the categories below do not exist, please enter n/a.

- (i) Numbers of men and women on access or foundation courses N/A
- (ii) Numbers of undergraduate students by gender

Full- and part-time by programme. Provide data on course applications, offers, and acceptance rates, and degree attainment by gender.

A. Undergraduate Admissions Data

- The Faculty admits around 250 undergraduates per year. There are 12 lecture courses in Year 1, 16 in Year 2, 36 in Year 3 and 72 choices offered in Year 4. The majority of lectures are delivered by the academic staff from the two Departments. However, between 19% (Years 2&3) and 25% (Year 1) of undergraduate lectures are delivered by College Teaching Officers (and a small number of researchers in Year 4). College Teaching Officers are not employed by University but play a vital role in the Faculty to support teaching

Figure 5 illustrates the numbers and proportions of new undergraduate students by gender over the last 5 years. At 17.4% (2016) the Undergraduate female intake is much lower than the national average of female mathematics undergraduates (38% in 2014/15). The percentage of new female undergraduates starting is up from 13.8% in 2015.

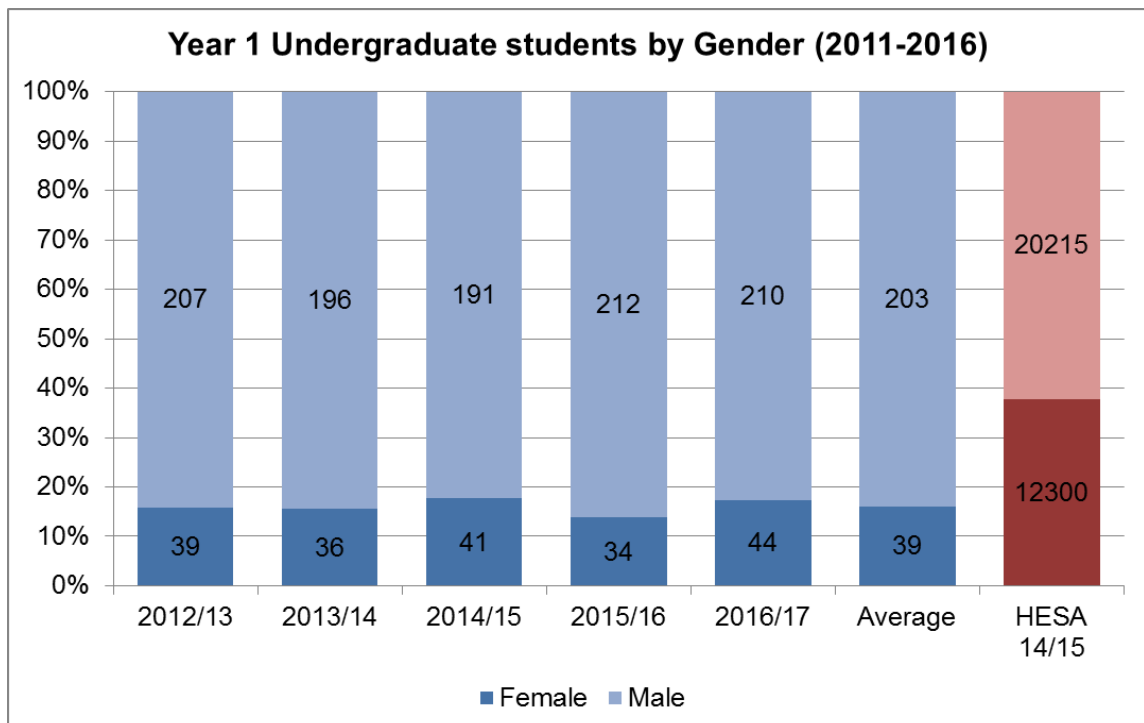
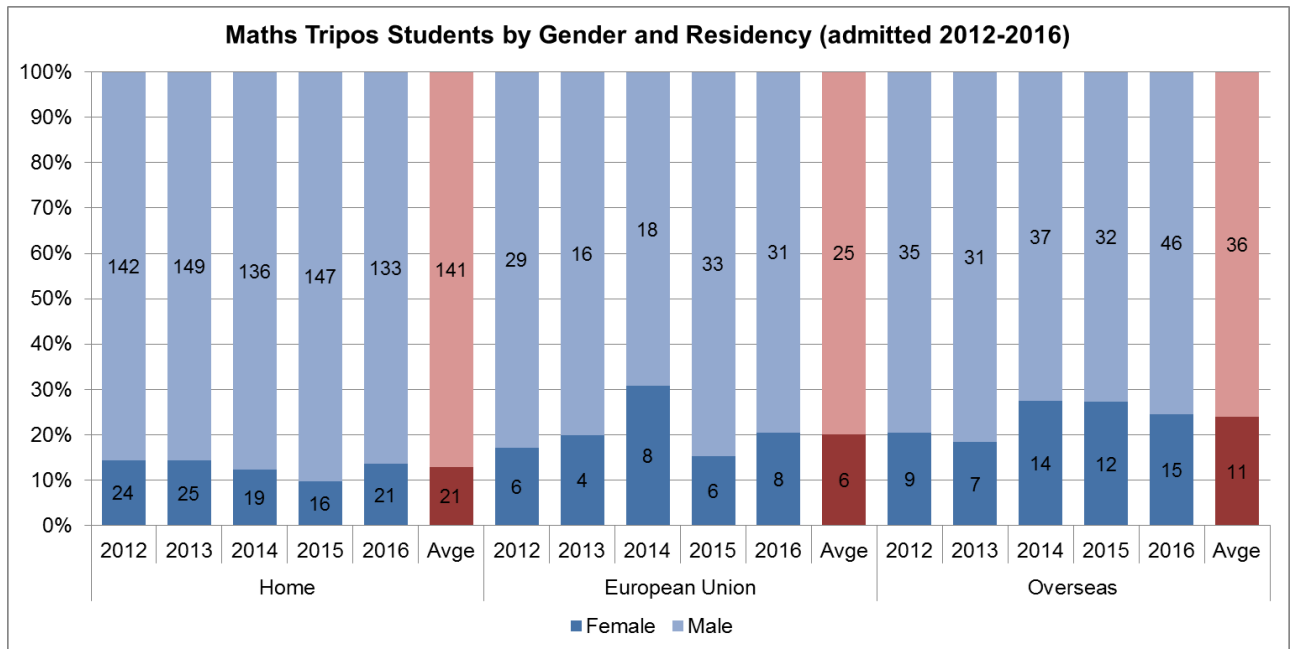
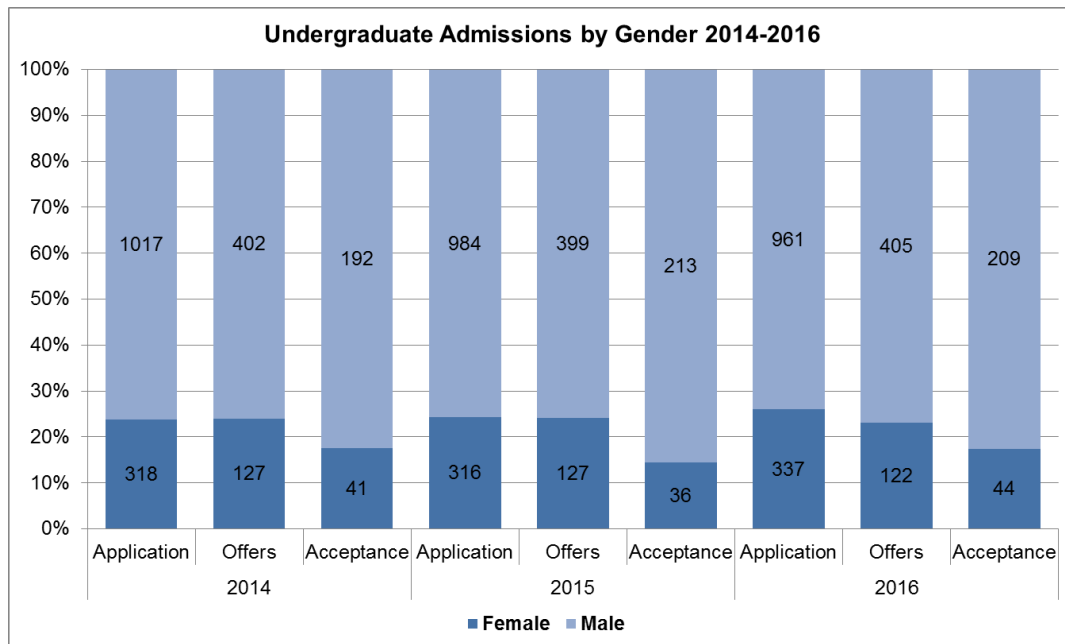


Figure 6 illustrates that a higher proportion of female undergraduates are from the EU or overseas. The proportion of female home (UK) students is only 14% in 2016 (21% of EU, 25% of overseas)



- Entry requirements to study Mathematics at Cambridge are very stringent, normally A level Further Maths (FM) but AS Level FM as a minimum (see also information below). The proportion of female A Level FM candidates averages 29% from 2012-2015. This means there is a reduced potential pool of female candidates for our Undergraduate course.
- Students must take the Sixth Term Examination Paper (STEP). These papers are additional mathematics examinations, taken at the end of Y13. They form part of almost all conditional offers to applicants for mathematics and some related degrees at Cambridge and some other universities. STEP is administered externally by Cambridge Assessment. Reasons why the Colleges use STEP include:
 - STEP is a good predictor of success in the undergraduate course because the questions are less standard and less structured than, for example, A-level questions.
 - Preparation for STEP serves as useful preparation for our course.
 - STEP scripts are available for inspection. This means that it is possible to make allowances for a near miss and to make judgements on the actual work rather than on just the marks or grades.

Figure 7 shows the applications, offers and acceptances by gender. Although offers to female applicants mirror applications, women tend to perform less well in STEP and consequently fail to make their offer, resulting in a lower acceptance rate. The admission rates specifically for Home women is of particular concern (14% in 2015/16, cf. 25%/21% Overseas/EU students).



- At present, the University advertises a ‘typical offer’ for the Mathematical Tripos of A*A*A (Mathematics, Further Mathematics + another subject) + 1,1 in STEP 2 and 3. However, only about two-thirds of our places are filled by those who achieved the STEP grades. For the remaining one-third of our places, Colleges review the full applications (school references, interview reports, STEP marks and scripts).
- Data analysis shows the 5-year average of female undergraduate admissions is around 16% (with 25% female applications). Comparable Oxford figures were 27% female admissions with 36% female applications. A key aspect seems to be the number of applicants, since the applicant-to-acceptance rates, i.e. conversion rates, for Oxford and Cambridge are similar. (Oxford is used as a comparison because of availability of data and a similar College system).

Previous Undergraduate Admissions Actions:

- A) Working more closely with the Colleges and collecting more data to understand the issues and identify data driven solutions.
 - Undergraduate admissions are overseen by the Colleges and are outside the direct control of the Faculty. However in 2014, the Faculty formed a new Mathematics Undergraduate Admissions Committee (MUAC) with members appointed by both Colleges’ Directors of Studies meetings and by the Faculty Board, as a means of liaising more closely with Colleges on admissions. MUAC’s remit includes explicitly the monitoring and review of application, entrance and cohort-tracking statistics related to Equality and Diversity (E&D).
 - A new Working Group, with representatives from the Athena SWAN panel, the Teaching Committee and MUAC, is now systematically collecting full data (gender, contextual information about applicants, A-level and STEP grades, Tripos grades, and much more) for several cohorts, and has started a full statistical analysis of the data, with the aim of

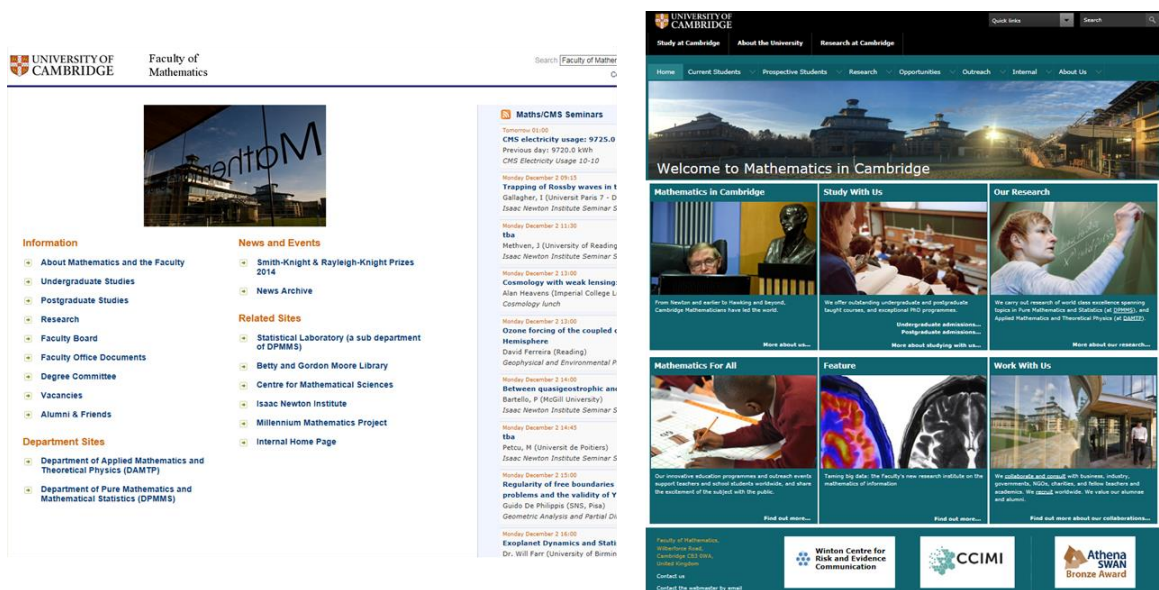
recommending evidence-based innovative practice for increasing the number of female mathematicians at Cambridge.

- The newly appointed Faculty Admissions Officer is female.

B) Working to attract more female applicants

- Changes to the website have been made in order to increase diversity, including a new front page which includes images of our female mathematicians and a prominent icon and link, with the Athena SWAN logo, to new 'Women in Maths' webpages. Admissions webpages have also been completely revised, and contain multiple images of both female and male students and lecturers. The Faculty has funded extra computer officer time and hired a professional photographer for producing a bank of new photos with the explicit brief of representing diversity.

Figure 8 illustrates the improved Faculty webpages with a comparison between Bronze submission in 2013 and the current front page.



- STEP Prep Easter and Summer Schools have been delivered with a new one day face to face training for maths offer holders introduced in 2017 alongside new initiatives for Open Days.
- The Faculty has introduced a new online STEP Support Programme following a successful funding bid to the Department for Education. The programme provides weekly assignments from the summer of Y12 onwards designed to provide a graduated introduction to advanced problem-solving and support for STEP preparation. Assignments are freely available to all online, and are designed to build confidence as well as fluency. Additional support is provided by online discussion boards mentored by Cambridge mathematics students and MMP staff. All the MMP staff working on the development and delivery of the STEP Support Programme are female, and there are both male and female volunteer student mentors. Informal feedback from schools suggests that it may have a positive effect on female students particularly.
- The Faculty outreach programmes NRICH and Underground Mathematics provide further resources to support students and teachers with STEP (Figure 9).

Figure 9: An illustration of STEP resources available on the Maths websites

STEP Support Programme - free online resources

We have launched this new online **STEP Support programme** to help university applicants develop their advanced problem-solving skills and prepare for sitting STEP Mathematics examinations. The programme is developed by the Faculty of Mathematics and **NRICH**. It consists of weekly **online modules** for individual additional study, and an online **discussion forum**. The resources are free and open to everyone.

Each module assignment contains structured mathematical problem-solving exercises, leading to work on a STEP question. The modules include supportive self-evaluation material and partial solutions, to help you assess your progress and identify areas that need more work.

NRICH enriching mathematics

Primary Secondary Topics Search NRICH Go

Home Students Teachers STEM Events

How to Use Advanced Problem Solving
Getting the most out of these resources

STEP Forum
STEP Support resources

Welcome to the NRICH Advanced Problem Solving pages.

These resources are designed to help potential university applicants develop their advanced problem-solving skills and prepare for sitting examinations such as **STEP**. The material has been carefully selected to provide an accessible and supportive introduction to advanced problem-solving, and to help you build your confidence, fluency and speed.

Start by [reading about the materials](#), or scroll down to get started on the modules.

The 24 modules below begin with general problem-solving skills and gradually introduce new techniques, ideas and advice to help you to solve advanced problems.

There is also a [discussion forum](#) to support Y12 and Y13 students preparing for STEP and other advanced mathematics examinations. You can ask for help and hints if you're stuck, share what you have tried so far, offer advice to others and get expert guidance from Cambridge University students and staff.

You may also be interested in Stephen Siklos's book, [Advanced Problems in Mathematics: Preparing for University](#), which can be downloaded for free.

Advanced Problem Solving Module 1
Our first Advanced Problem Solving module provides a gentle introduction to being a problem-solver.

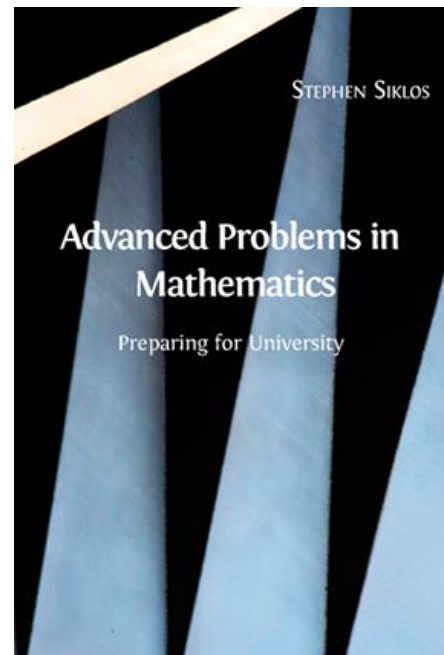
Advanced Problem Solving Module 2
The second Advanced Problem Solving module introduces you to mathematical notation and logical thinking.

Advanced Problem Solving Module 3
This Advanced Problem Solving module introduces some important aspects of mathematical proof.

Advanced Problem Solving Module 4
Our fourth module aims to give you a clearer understanding of the concepts underpinning calculus.

Advanced Problem Solving Module 5
Our fifth module explains some key calculus skills.

Advanced Problem Solving Module 6
In our sixth Advanced Problem Solving module, clever substitutions are the key to solving problems.



- Mathematics 'Masterclasses' delivered annually now always include female speakers (unlike some previous occasions).
- Changes to the Faculty's Open Days enable direct monitoring of gender of participants and direct collection of feedback.
- Useful data acquired and protocols put in place for systematic data collection to enable in-depth analysis and discussion ongoing in all relevant committees (not just SAT).

Undergraduate admissions impact to date

- Increase in female undergraduate applicants from 23% in 2012 to 26% in 2016.
- Increase in number of female undergraduates from 38 (15.4%) in 2012 to 45 (17.5%) in 2016 .
- Increased awareness and shared best practice has led to collaboration between some Colleges and the Faculty, for specific outreach events aimed at schoolgirls.
- Since September 2016, more than 1,100 users have shown meaningful engagement with the online STEP support programme (downloaded at least the first 4 assignments), and currently around 600 users have worked through the majority of the programme assignments to reach the advanced modules (39 online modules have been published). In the period 1 September 2016 - 5 April 2017 these module assignments attracted over 33,800 unique downloads in total.
- All Cambridge state-school Mathematics offer-holders are invited to participate in a full-day face-to-face STEP Support event to supplement and extend the online programme. 188

UK state school Y13 offer-holders accepted the invitation and attended these events in March 2017 (28% female).

- Maths Masterclasses 433 participants (38% female).
- Sutton Trust Summer School: 175 attendees between 2013 and 2016 (39% Female). The summer school includes a mix of workshops, problem-solving sessions, lectures and 'tasters' of Cambridge supervisions. ~29% of female attendees apply to Maths at Cambridge, of whom 44% receive an offer (which compares well with the % of male applicants ~ 42% apply, of whom 44% receive an offer).
- Several committees besides AS have started discussing gender data and trying to understand any trends and finding ways of reducing the gender imbalance in admissions.
- The new Undergraduate Admissions Committee has promoted effective collaboration between the Colleges and the Faculty, including agreement on best practice for diversity at College Open Days.
- During our Open Days, female presence by Faculty members (Academic, Research and College staff as well as students) has been noticeably higher. Part of a general increase in participation by all staff, male and female.
- Development of a proposal in 2017 that a few Colleges should pilot a tailored offer where targeted candidates would be required to make *either* A*A*A/1,1 (in A-levels/STEP) *or* A*A*A*/1 (where A*A* is required in Maths and Further Maths, and the grade 1 is in *either* STEP 2 *or* STEP 3). This tailored offer would be made on the basis of contextual data. The aim of this alternative offer is to attract more and better candidates, particularly female and other under-represented groups.

Despite a significant increase in activities designed to attract and support female undergraduates, admission numbers remain lower than comparable institutions

SILVER ACTIONS

2. To increase numbers of undergraduate applications from women

- 2.1 New flexible admissions criteria piloted with small number of Colleges.
- 2.2 Continue with complete overhaul of undergraduate admissions website structure, content and language style.
- 2.3 New initiatives for Open Days and for Oxbridge Conferences.
- 2.4 Regularly collect and monitor gender breakdown for Maths Masterclasses, Sutton Trust Summer Schools and Open Day attendees and speakers.
- 2.5 The Faculty is developing a new Prospectus for undergraduate applicants, to replace the current 'Guide to Admissions' and the 'Open Day pack'.
- 2.6 Outreach videos published online so that a larger number of applicants get a chance to view them.

3. To increase female undergraduate admissions, particularly home and state school students

- 3.1 Demand best practice in STEP, including blind-marking by Cambridge Assessment.
- 3.2 Monitor STEP performance by gender, in light of increased online STEP support.

B. Undergraduate Attainment

There is an attainment gap between male and female students across all years of undergraduate study (Figures 10,11,12). 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 (Figure 13).

Figure 10 shows exam results in the first year. Although the number of female students achieving a first is still much lower than we would wish, the disappointing figures for 2013 are well below recent averages. These results were an exception that elicited much discussion at Teaching Committee and Faculty Board to identify the causes and agree appropriate actions.

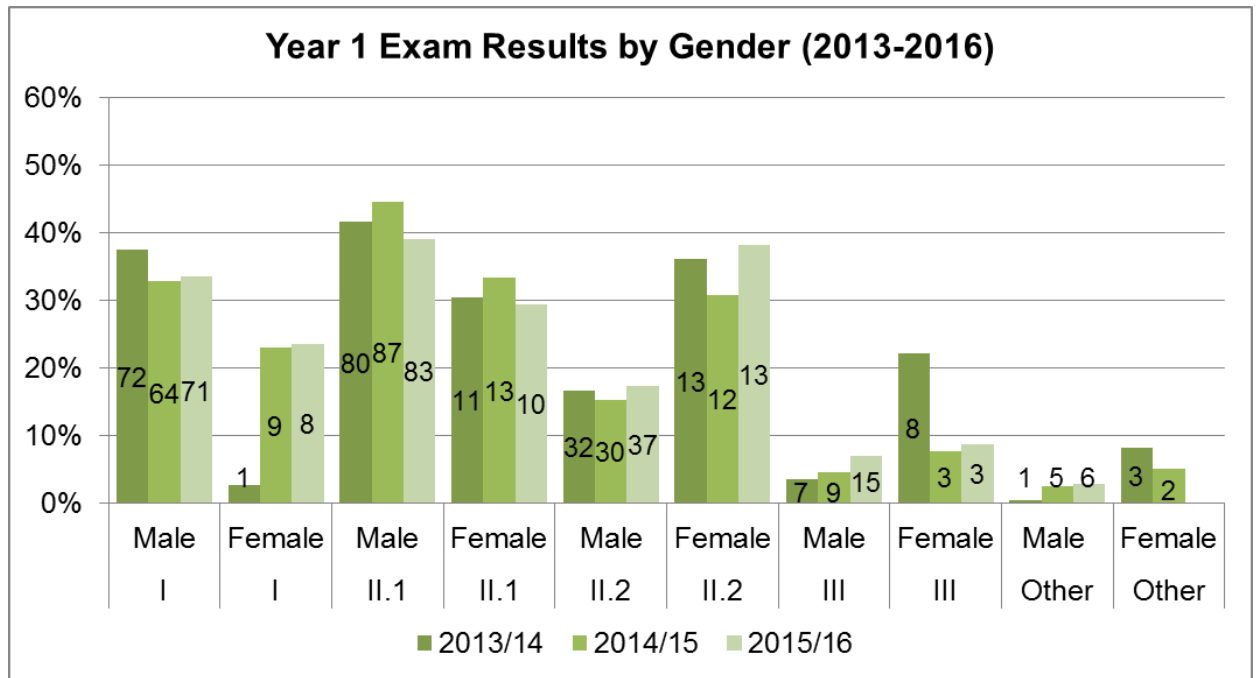


Figure 11 shows similar results to the first year (Figure 10) with female students more likely to get a II.2 than a First.

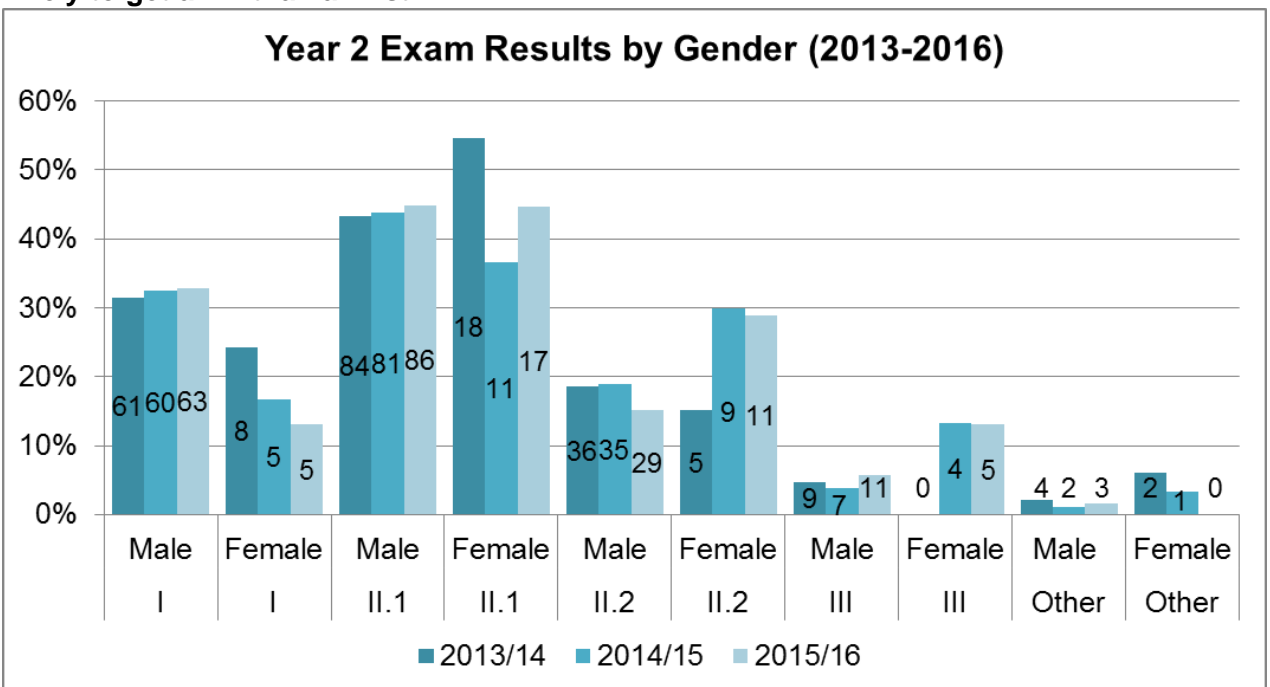


Figure 12 shows that by year 3 the performance of female students has improved and the attainment gap has been significantly reduced, particularly when firsts and II.1s results are combined.

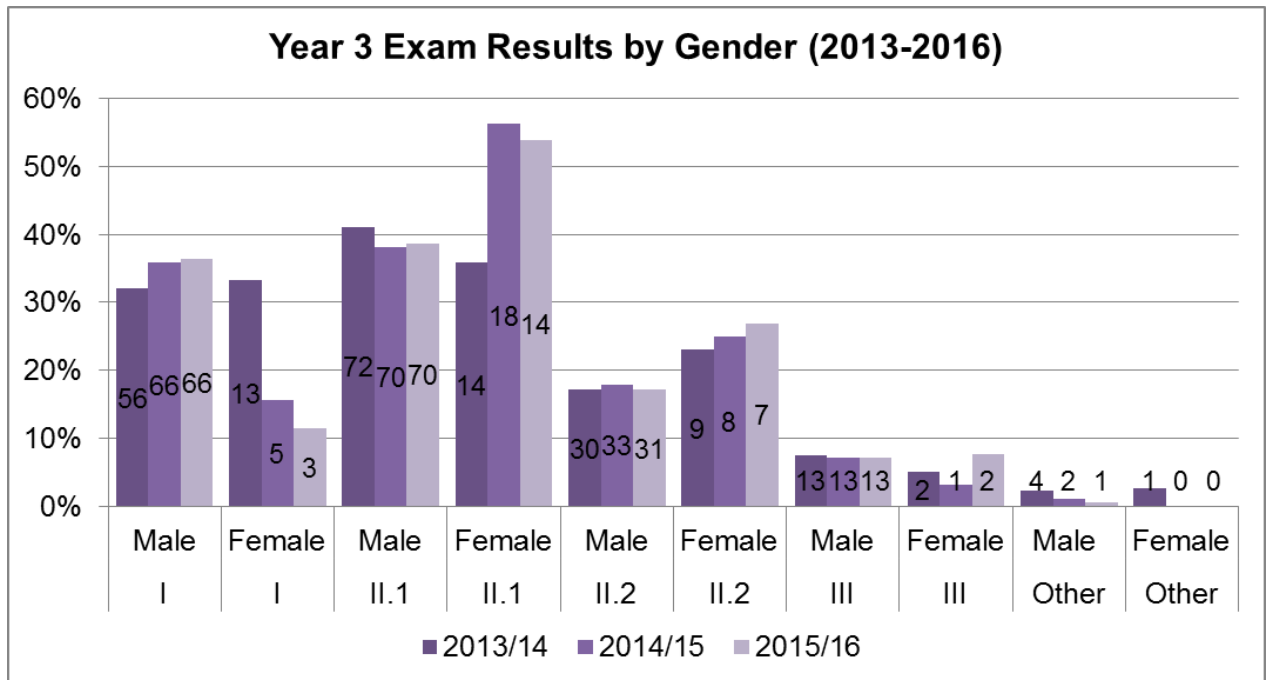
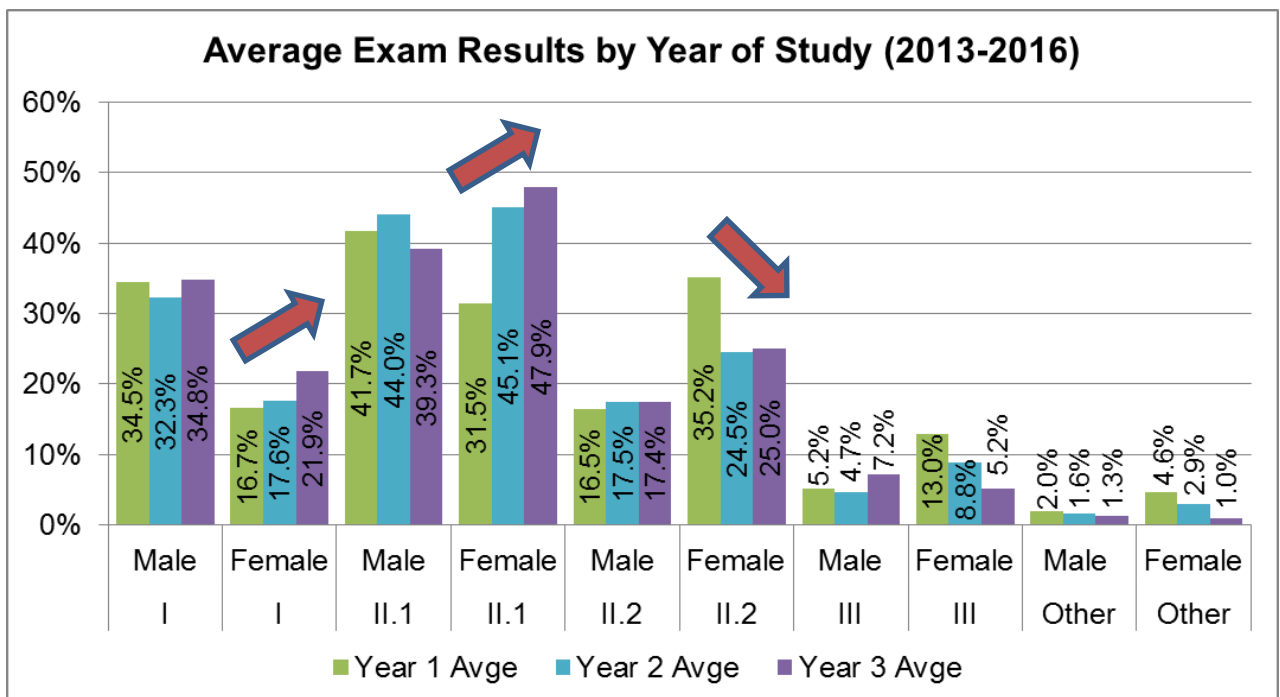


Figure 13 shows the average results over the past three years. The averaged results show the overall increase in the proportion of female students achieving firsts and II.1s in the final year compared to years 1 & 2 (with a concurrent decrease in the proportions gaining II.2s). Note: 'Others' includes DDH¹, failed, and withdrawn.



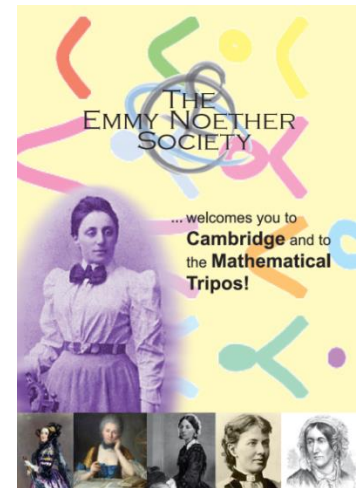
¹ DDH: Declared to have Deserved Honours, but not classed. This includes visiting and exchange students, and students who may have missed part of the examination because of illness, but have shown evidence of attainment at Honours level.

Previous Undergraduate Attainment Actions and Impact

- The reading list has been revised and includes more books by female mathematicians.
 - We have enlarged the Saturday Maths Café to include all Saturdays in term time. Maths Café has been established as a central meeting place with coffee/cakes encouraging collaborative work. The Faculty pays for refreshments and graduate helpers.
There is a steady stream of students participating, about 20 each week, with about 1/3 female and 2/3 male, which is a higher percentage of females than in the undergraduate population. Some weeks there are over 30 students taking up help in Maths Café.
 - The *Emmy Noether Student Society* (ENS) aims to promote women studying mathematical sciences. They host talks from female mathematicians and informal events between students and academics, from both Cambridge and other universities.
- Increased awareness, and implementation, of importance of female lecturers as positive role models. At least one female Lecturer has been ensured across all years of the Tripos since 2013, aside for one occasion when there were no female Lecturers in the second year, mainly due to staff being on leave. This instance was raised and discussed at Faculty Board, and as a result further procedures to ensure best practice were agreed.
- Faculty grant of £1,000 awarded to Emmy Noether Society (ENS) in 2015. Further grant in 2016 (£500), plus publishing costs for a newly produced ENS booklet, which was distributed in hard copy to all new students and published online. ENS activities much enhanced (both academic talks and social events) and better publicised, including on public screens in the Faculty.
- Useful data acquired and protocols put in place for systematic data collection to enable in-depth analysis and ongoing discussion in all relevant committees (not just SAT). These analyses, including cohort tracking and consideration of stereotype threat, are key to a better understanding of the attainment gap

I go to Maths café most weeks - it has been a very useful place to meet and collaborate with people doing my courses. Having a couple of PhD students there has also been helpful at various points to be able to get some help on understanding certain topics outside the context of a supervision.

Female Year 3 student



SILVER ACTIONS

4. To address attainment gap at undergraduate level

- 4.1 Collect data by gender for attendance and feedback at all support initiatives e.g. Saturday Maths café, Wednesday talks
- 4.2 Analyse undergraduate results by year including progression. Analysis of cohort tracking data.
- 4.3 Study evenings for women in CMS led by Corfield Lecturer and ENS (see also Action 1.3)
- 4.4 Monitor gender distribution across colleges. Use Inter-collegiate supervision sessions for Colleges with small numbers of female students.
- 4.5 Introduce Undergraduate buddy system (using 2nd / 3rd year female students to support 1st year students)
- 4.6 Review of example sheets
- 4.7 Extend supervisor training on how to challenge peer sexism and misbehaviour

(iii) Numbers of men and women on postgraduate taught degrees

Full- and part-time. Provide data on course application, offers and acceptance rates and degree completion rates by gender.

PGT admissions

- The Faculty offers two Taught Master courses. The first, Part III (~250 students per year), combines undergraduates studying for a 4 year (MMath), along with students from other universities (MASt), who use the intensive taught course as a springboard for PhD study in Cambridge and elsewhere.
- There is a smaller MPhil in Computational Biology aimed at introducing students in the biological, mathematical and physical sciences to quantitative aspects of modern biology and medicine, including bioinformatics (~20 students per year).

Figure 14 illustrates the breakdown of Taught Masters students by gender. Overall, the proportion of female students, as for undergraduates, is lower than the national average (36%).

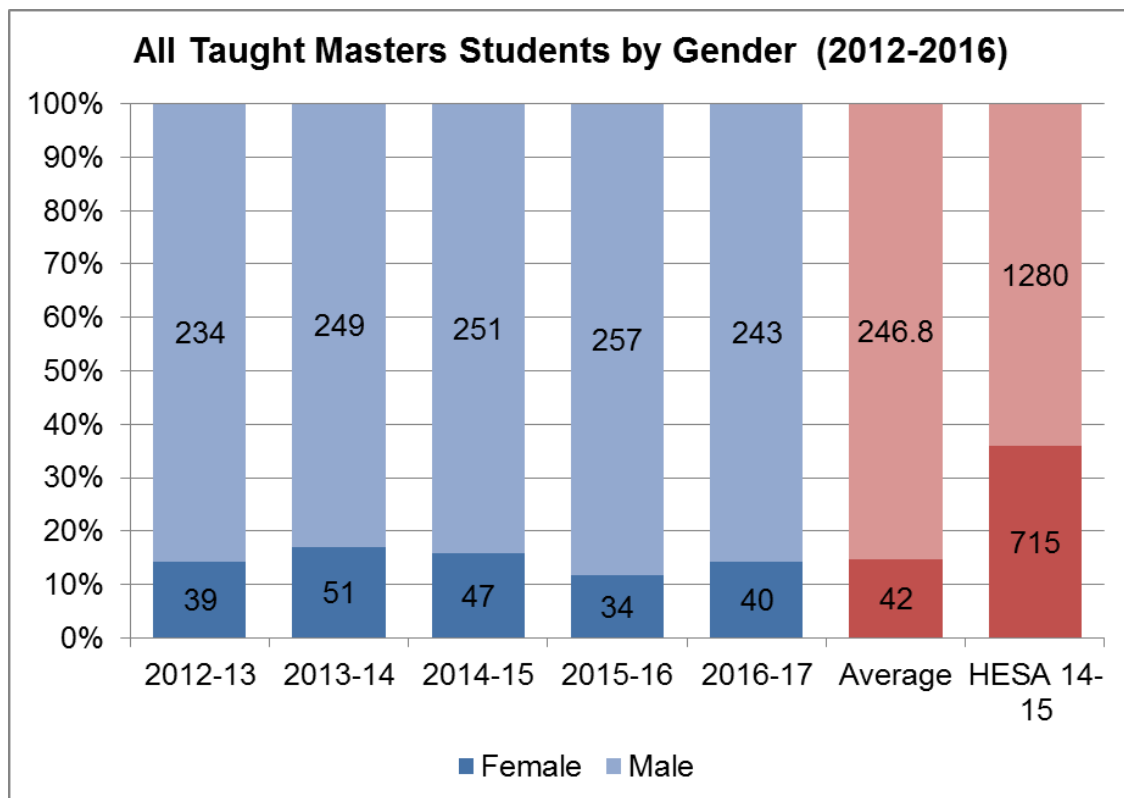


Figure 15 illustrates the higher proportions of women on MAST and MPhil courses compared to those continuing on from the three 3 year Maths undergraduate degree (MMath).

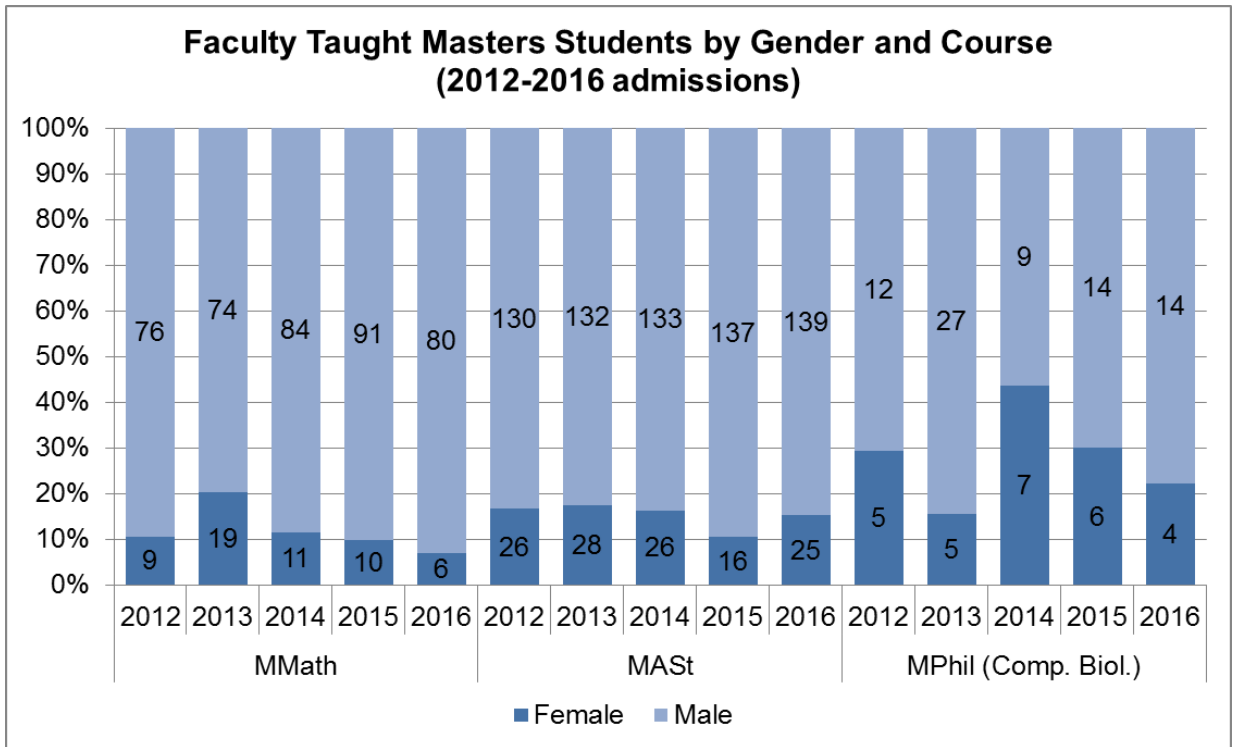
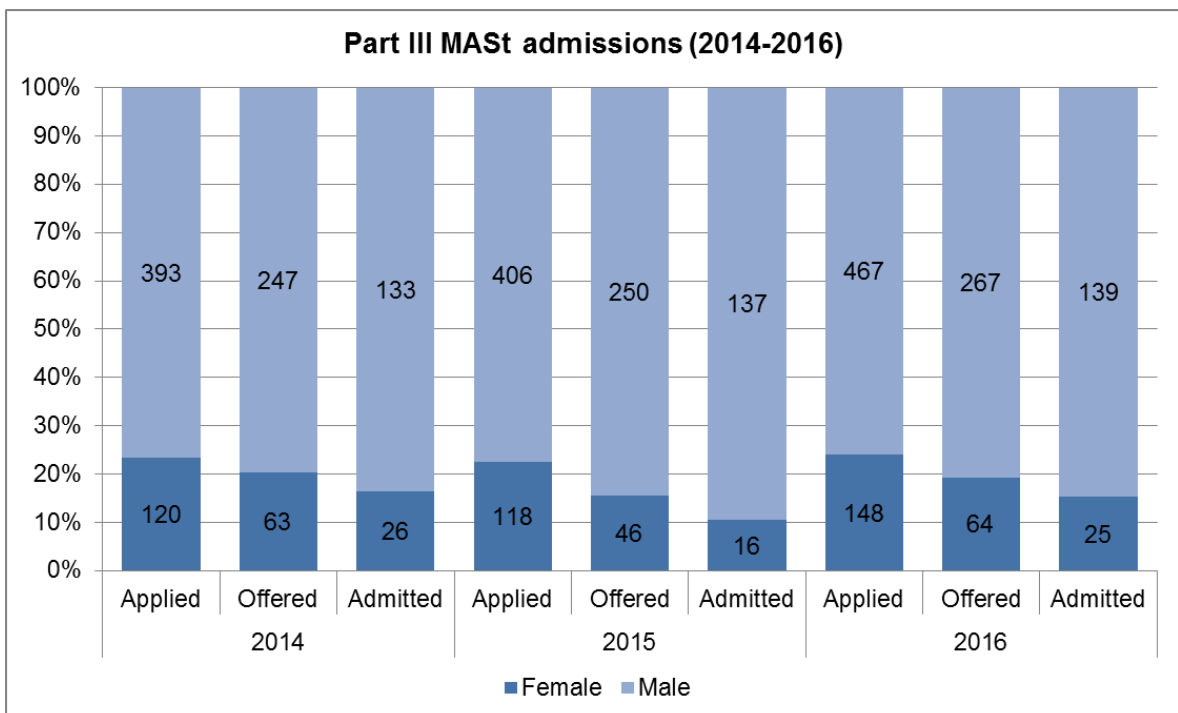


Figure 16 shows a lower proportion of female MAST students admitted than applied. This is mainly due to the strict academic requirements (the minimum entry requirement for non-Cambridge graduates is normally at least a UK first class honours degree in mathematics, physics, engineering, or statistics, or an equivalent qualification.)



SILVER ACTIONS

9. To increase numbers of postgraduate applications from women

- 9.1 Targeted advertising of graduate scholarships (PhD).
- 9.2 Targeted advertising of Part III programme (MASt).
- 9.3 Complete overhaul of website structure, content and language style to match new undergraduate pages.
- 9.4 Monitor applications, offers and acceptances by broad subject area.
- 9.5 Explore new ways of encouraging students, particularly females, to apply for further studies and research: perhaps some mostly female workshops/events, social/academic events with current female researchers in Cambridge.

PGT attainment

Figure 17 illustrates a difference in the performance of candidates by gender in Part III, comprising both internal MMath and external MASt students. The gender gap in performance is almost entirely due to the results for MASt students, with MASt females more likely to get honours rather than distinction or merit, as illustrated in Figure 18

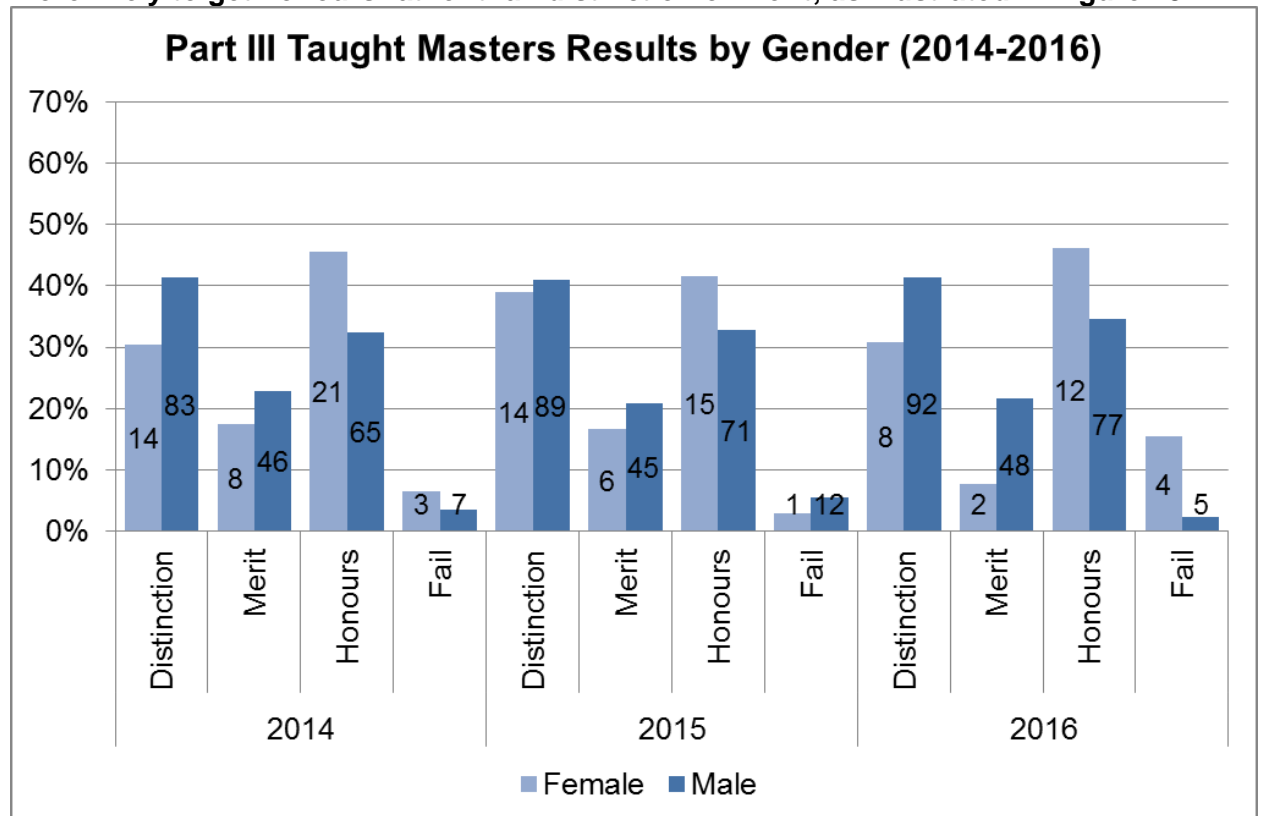


Figure 18 shows the difference in performance of candidates by gender and by original source (internal MMath and external MAST), averaged over three years. The number of female MMath students is quite small, so the uncertainty in the data is much larger than it is for male students. When this is taken into account, the performance of female MMath students is comparable on average to that of their male counterparts.

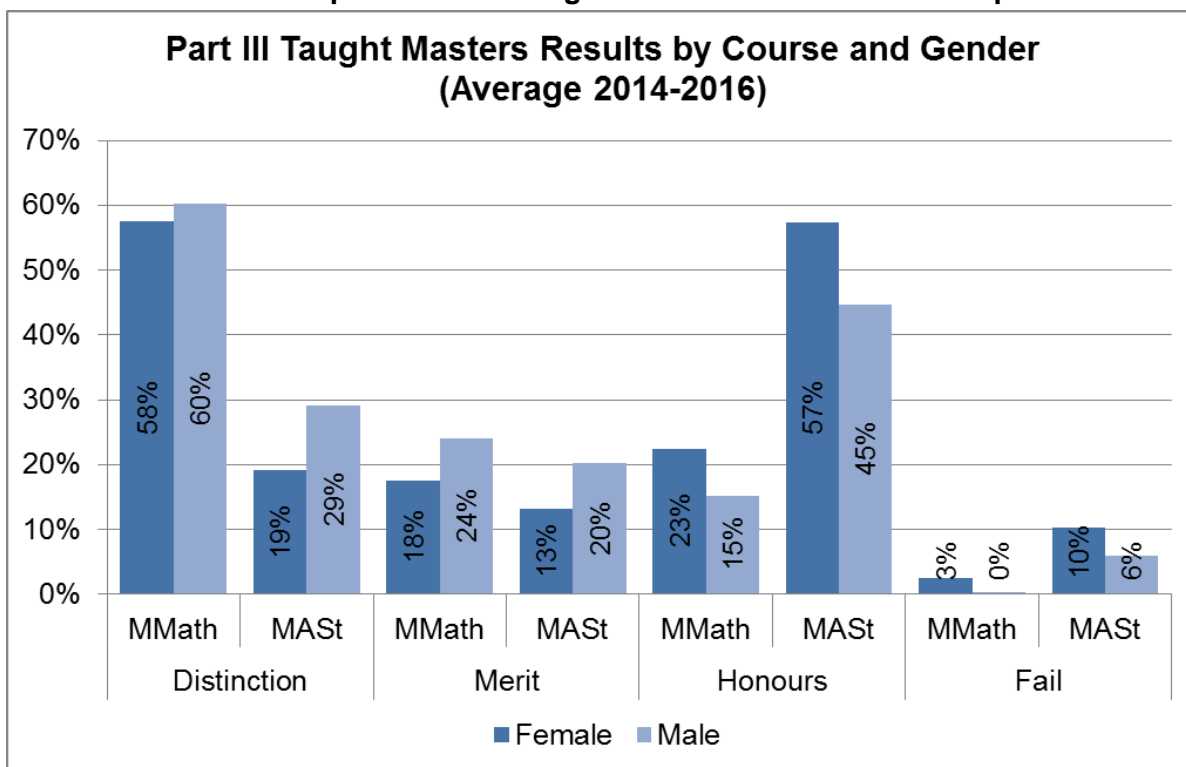


Table 2 MPhil in Computational Biology Results illustrating comparable performance by gender in achieving distinctions in this course over the last three years.

| | | Female | Male |
|-----------|-------------|---------|----------|
| 2013-14 | Distinction | 1 | 14 |
| | Pass | 4 | 10 |
| 2014-15 | Distinction | 3 | 4 |
| | Pass | 3 | 4 |
| 2015-16 | Distinction | 3 | 6 |
| | Pass | 1 | 9 |
| Aggregate | Distinction | 7 (47%) | 24 (50%) |
| | Pass | 8 | 23 |
| | Fail | | 1 |

PGT actions to date and impact

- The provision and attendance to various Part III support activities is now, where possible, regularly recorded by gender. This includes drop in sessions as well as catch up workshops and Wednesday talks.
- Development of Part III Preparation Resources website to provide support for students before they start the course.
- PhD students are trained and supported to give two hours of 'Catch-up' workshops across 11 topics covering material included in the year 3 undergraduate curriculum, but not always taught in undergraduate courses at other universities. The workshops are interactive, with

Every time I went to a Part III drop-in, I got some questions answered or gained new insight. *Part III student*

some explanation “at the blackboard” and some easier (then progressing in difficulty) examples for students to work on themselves (Table 3).

Table 3. Attendance by gender for ‘Catch-up’ workshops illustrating a higher proportion of female attendees as a proportion of their gender cohort in 2 of the last 3 years (Average 10.2% F vs 8.2% M) . The number of ‘Total attendees’ is the total number who attended the workshops, counting some students more than once if they attended more than one workshop.

| Year | Average attendance as % of total male/female Part III cohort | | Average male/female % of attendees at each workshop | | Total attendees |
|------|--|--------|---|--------|-----------------|
| | male | female | male | female | |
| 2014 | 5.7% | 10.2% | 74.9% | 25.1% | 171 |
| 2015 | 8.9% | 8.5% | 89.4% | 10.6% | 254 |
| 2016 | 9.9% | 11.9% | 83.5% | 16.5% | 260 |

- Increased office hour opportunities for contacts with Part III /graduate education officers. Increased level of support provided for students and workload shared across both Departments.
- Students surveys show female Part III students have higher expectations than before: 77% declared to aim for a distinction, compared to 64% in 2014.
- Positive feedback in end of year surveys has improved.

There was a lot of interesting mathematics, and the opportunity to talk about it with current and future leaders in the subjects was excellent. There are also a large number of members of the departments who care very much about making sure that the course is presented as well as possible, and they really showed this. *Part III student*

SILVER ACTIONS

6. To increase the level of feedback provided to PGT students

- 6.1 Marking of questions (2 per student) per example sheet. Reinforce to students and supervisors that marking is expected as part of example classes. Payment for non-academic staff for examples classes and marking.
- 6.2 Uptake by students of example class marking is low. Course Lecturers to highlight opportunity for feedback via marking and encourage students to submit work.
- 6.3 Part III Committee to review examples classes, marking and impact of additional workload for course lecturers.

7. To address attainment gap in PGT courses

- 7.1 Monitor attendance at Part III support initiatives by gender.
- 7.2 Study groups will be encouraged and their aim and usefulness explained in more detail
- 7.3 Further development of Part III webpages including development of “worksheets” or example sheet suggestions for Part III offer holders to do over the summer so they can find out whether they do have an appropriate level in a given area or need to learn/revise some specific topic.
- 7.4 The Faculty will change the way scripts are assigned numbers during anonymisation to prevent identification of MMath or MAST candidates

(iv) Numbers of men and women on postgraduate research degrees

Full- and part-time. Provide data on course application, offers, acceptance and degree completion rates by gender.

PGR Admissions

- The two Departments run slightly different PGR admissions procedures primarily due to the distinct requirements of the different research groups as well as the diversity of funding sources. There are four admissions officers (two for each Department) who oversee and coordinate the admissions processes.
- The deadline for admissions is 31 December in all cases, driven by funding deadlines. Both internal and external candidates are recruited. Candidates are assessed on the basis of interview with at least two PIs, academic track record and references. Theoretical physics, where competition is particularly strong, has a written test for internal candidates in January.
- As well as the standard PhD programmes there is also the Cambridge Centre for Analysis (CCA) in an EPSRC funded Centre for Doctoral Training. The CCA PhD is a four-year course with a structured programme running over the first nine months when, besides beginning work on an initial research project, students work in teams to learn a broad spectrum of modern analysis, undertake an external project supervised by a user of mathematics in science or industry, and participate in a range of seminars, including industrial workshops.
- In addition the Wellcome Trust Mathematical Genomics and Medicine (MGM) is a collaboration between the University and the Wellcome Trust Sanger Institute. This PhD programme provides the opportunity to work at the interface between the mathematical and computational sciences, and genome-scale and translational medical research. The programme follows a “1 + 3” model, comprising a tailored first year of taught modules and research rotations, followed by a three-year research project.

Figure 19 illustrates the proportion of new female PhDs starting between 2013 and 2016 (23%) is higher than at undergraduate level and also increased from the previous 3-year acceptance rate (2010 to 2013) of 20%. The proportion of female PhD students is comparable to the UK benchmarking figure of 26.5% of Maths PhD graduates being female (average over four years, 2012-15).

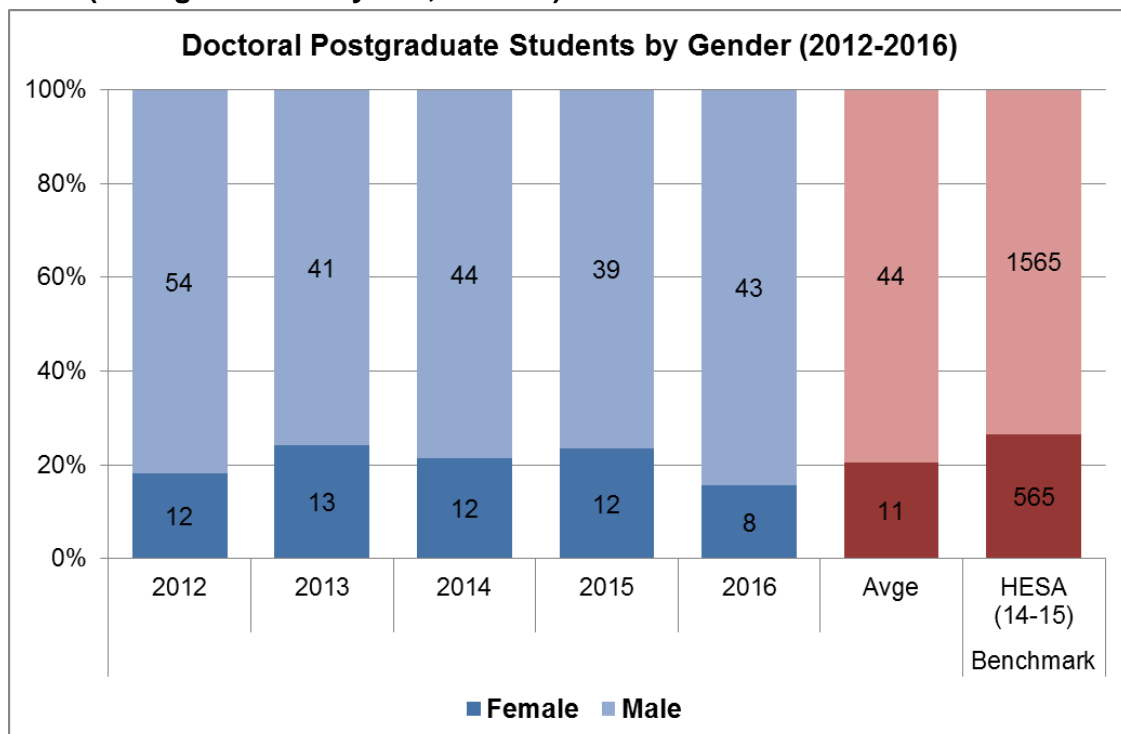


Figure 20 shows that the increase is in part due to the increased proportion of female EU and Overseas students admitted to PhD courses compared to the Undergraduate degree. There is also an increase in UK-resident women at PhD level compared to the Undergraduate level.

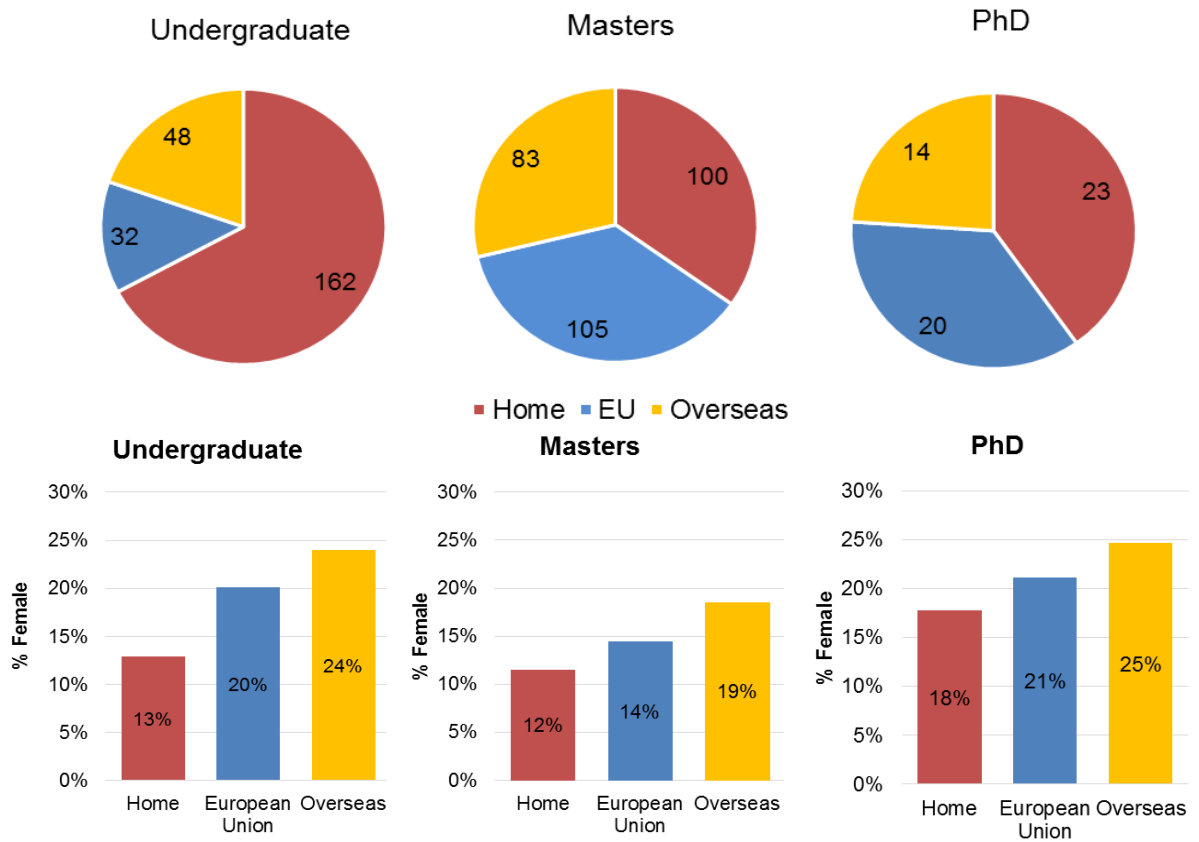
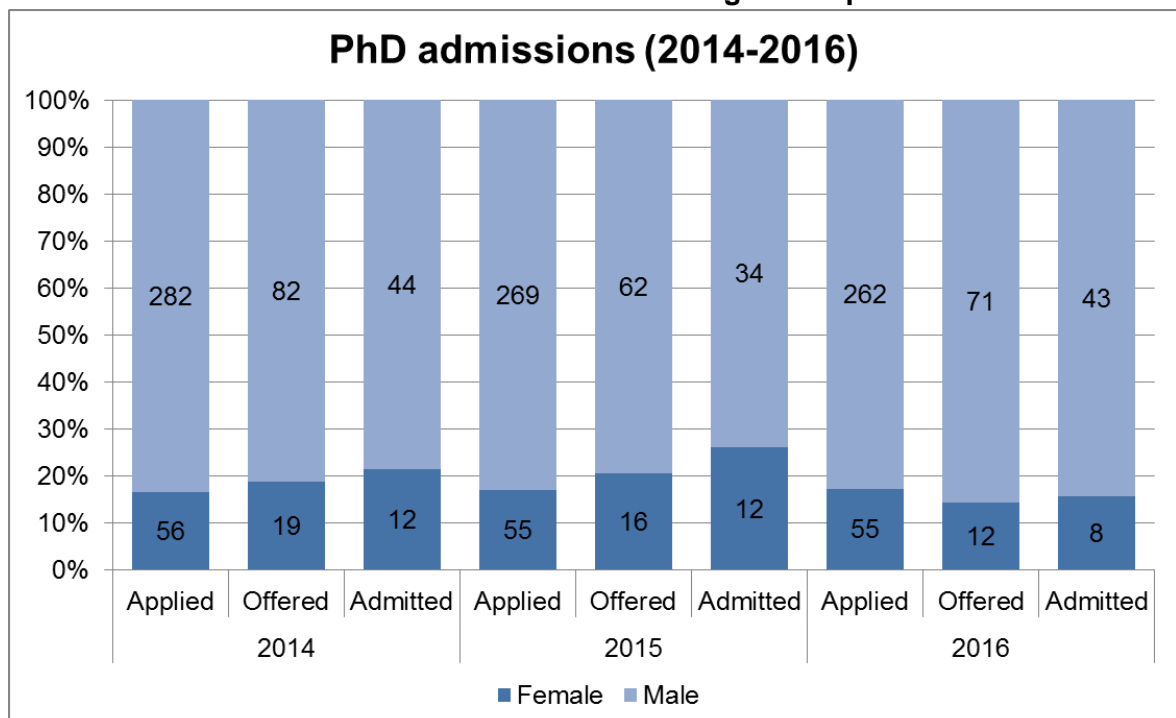


Figure 21 illustrates that across the Faculty the proportion of female admissions is equal to or higher than the proportion applying. Numbers have been combined as small numbers of student on each courses makes meaningful comparison difficult.



PGR Completion Rates

Table 4 illustrates a high proportion of PhD students in the Faculty finishing within four years. Of those who did not finish within 4 years, only 1 was female. Overall, the proportion of students failing to complete is less than 5%.

| 2009/2010 Starters | | | 2010/2011 Starters | | | 2011/2012 Starters | | |
|--------------------------|-------|----|--------------------------|-------|----|--------------------------|-------|----|
| Submitted within 4 years | Total | % | Submitted within 4 years | Total | % | Submitted within 4 years | Total | % |
| 34 | 40 | 85 | 32 | 40 | 80 | 32 | 40 | 80 |

PGR actions to date and impact

- Careers support and transferable skills development via Researcher Development Programme (>350 students attended RDP events in 2015/16).
- Since 2014, Graduate Advisors have been appointed for all PhD students
- Annual Careers events including Careers for Mathematicians and Careers in Quantitative Finance (2016 attendance for these 2 events was 725, 86% male).
- Higher percentage of female students admitted than apply, and this has been increasing over the past 6 years.
- The Graduate admissions officers are aware of the need to identify and attract strong female candidates for PhD places. In a number of recent cases we have been able to use departmental underwriting to make early fully funded offers which was key to securing outstanding female applicants.
- Student survey results show the proportion of all graduate students who felt that the Faculty promotes career opportunities for them is up from 78% in 2014 to 87% in 2016, and this increase is significantly larger for female graduates: from 68% to 86%.

SILVER ACTIONS

8. Careers support and transferable skills development.

- 8.1 Review researcher development programmes and offer one Faculty-wide programme (monitoring attendance by gender). Extend researcher development programme with interactive skills lectures including topics like job hunting and leadership.
- 8.2 Encourage more female participation in summer placements (e.g. holding short informal talks/workshops by female students who have done a summer placement).
- 8.3 Publicise careers info including careers for mathematicians events and industrial seminars as part of PhD programmes.
- 8.4 Review graduate student practices between two Departments and develop one student handbook which covers all PhD courses.
- 8.5 Extend and monitor buddy scheme for new PhD students.

9. To increase numbers of postgraduate applications from women

- 9.1 Targeted advertising of graduate scholarships (PhD).
- 9.2 Targeted advertising of Part III programme (MASt).
- 9.3 Complete overhaul of website structure, content and language style to match new undergraduate pages.
- 9.4 Monitor applications, offers and acceptances by broad subject area.
- 9.5 Explore new ways of encouraging students, particularly females, to apply for further studies and research: perhaps some mostly female workshops/events, social/academic events with current female researchers in Cambridge.

- (v) Progression pipeline between undergraduate and postgraduate student levels

Identify and comment on any issues in the pipeline between undergraduate and postgraduate degrees.

Student progression:

Table 5 illustrates analysis of progression to graduate courses in the Faculty by gender.

| Average data over 3 years: 2009/10 to 2011/12 | Progression to MMath as % of original male/female cohort | | Progression to PhD as % of original male/female cohort | |
|--|--|------|--|------|
| | Female | Male | Female | Male |
| From U/G cohort | 24% | 38% | 8% | 8% |
| From MMath cohort | | | 23% | 19% |
| From MAST cohort | | | 4% | 9% |
| | | | | |
| Average data over 3 years: 2013/4 to 2015/16 | Progression to MMath as % of original male/female cohort | | Progression to PhD as % of original male/female cohort | |
| | Female | Male | Female | Male |
| From U/G cohort | 24% | 45% | 10% | 9% |
| From MMath cohort | | | 33% | 21% |
| From MAST cohort | | | 6% | 7% |

- A smaller percentage of female undergraduates progress from year 3 to Part III (MMath) (24%).
- Further analysis shows progression to Part III (MMath) from the eligible undergraduate cohort, i.e. students who achieved a First or a high II.1, is much more balanced by gender.
- Progression to PhD from the undergraduate cohort is similar for both genders.
- Progression to PhD from Part III has increased since the last submission (from 23% to 33%), and in particular it is much better from the MMath cohort.
- The trends point to the importance of concentrating efforts on achieving higher attainment by female students in the first three years of the undergraduate course, and fostering higher aspiration.

Progression actions to date:

Table 6 illustrates the numbers of speakers presenting at the 'Part III Research in UK' afternoon organised by DPMMS Graduate Education Officer². This event includes presentations from PhD students from other universities to introduce their universities and departments, as well as their own research. Student attendance is ~50 students annually.

| | |
|------|---|
| 2016 | 16 students from 9 universities, many including CDTs. |
| 2015 | 23 students from 12 universities + one CDT. |
| 2014 | 10 students, from 6 universities. |

² Gender split not recorded

SILVER ACTIONS

7. To address attainment gap in PGT courses

7.5 The Faculty has agreed to change the way scripts are assigned numbers during anonymization to prevent identification of MMath or MAST candidates

9. To increase numbers of postgraduate applications from women

9.5 Explore new ways of encouraging students, particularly females, to apply for further studies and research: perhaps some mostly female workshops/events, social/academic events with current female researchers in Cambridge.

9.6 Review student destinations by gender via data collected by the University Careers Service and develop actions where appropriate

4.2. Academic and research staff data

- (i) Academic staff by grade, contract function and gender: research-only, teaching and research or teaching-only

Look at the career pipeline and comment on and explain any differences between men and women. Identify any gender issues in the pipeline at particular grades/job type/academic contract type.

SILVER APPLICATIONS ONLY

Where relevant, comment on the transition of technical staff to academic roles.

Table 8: Faculty of Mathematics roles explaining titles and grades with reference to UCEA codes. Research Associates are typically Postdocs with Research Assistants typically working towards a PhD.

| Title | Grade | UCEA code | Contract Function |
|--|-------------|---------------|-----------------------|
| Academic & Research Staff | | | |
| Professor | 12 | 5A | Teaching and research |
| Reader | 11 | I | Teaching and research |
| Senior Lecturer | 10 | J | Teaching and research |
| Lecturer | 9 | J | Teaching and research |
| Research Fellow/ Senior Research Associate | 9 | J | Research only |
| Research Associate | 7 | K | Research only |
| Research Assistant | 5 | M | Research only |
| Professional and support staff | | | |
| Academic-Related Staff | 7 and above | I, J, K | |
| Assistant Staff | 7 and below | K, L, N, O, P | |

Table 9: Faculty of Mathematics Academic and Research Staff by academic function and gender. The census date for the data is 31st July each year. In this Section only the numbers have been updated to reflect status as at 31st December 2016.

| Year | Academic Function | Female | Male | % Female |
|-------------|-----------------------|--------|------|----------|
| 2012 | Research only | 8 | 75 | 9.6% |
| | Teaching and research | 8 | 82 | 8.9% |
| | Teaching only | 0 | 1 | 0.0% |
| | Total | 16 | 158 | 9.2% |
| 2013 | Research only | 16 | 87 | 15.5% |
| | Teaching and research | 7 | 79 | 8.1% |
| | Teaching only | 0 | 1 | 0.0% |
| | Total | 23 | 167 | 12.1% |
| 2014 | Research only | 17 | 74 | 18.7% |
| | Teaching and research | 7 | 82 | 7.9% |
| | Teaching only | 0 | 1 | 0.0% |
| | Total | 24 | 157 | 13.3% |
| 2015 | Research only | 19 | 81 | 19.0% |
| | Teaching and research | 7 | 80 | 8.0% |
| | Teaching only | 0 | 0 | 0.0% |
| | Total | 26 | 161 | 13.9% |
| 2016 | Research only | 25 | 82 | 19.6% |
| | Teaching and research | 10 | 75 | 11.8% |
| | Teaching only | 0 | 0 | 0.0% |
| | Total | 35 | 163 | 17.7% |

- The following charts outline the gender proportions of staff at Faculty and Departmental levels. A key focus of the Bronze Action plan was to address the low proportions of women in researcher and academic positions.

Figure 22: Faculty academic pipeline by gender (2012-2016) showing increases in the proportion of female academic and research staff across all career stages over last 5 years at Faculty level. Progress has been made via both recruitment (e.g. four new female lecturers recruited in last 3 years) as well as promotion (from Lecturer to Reader and Professor).

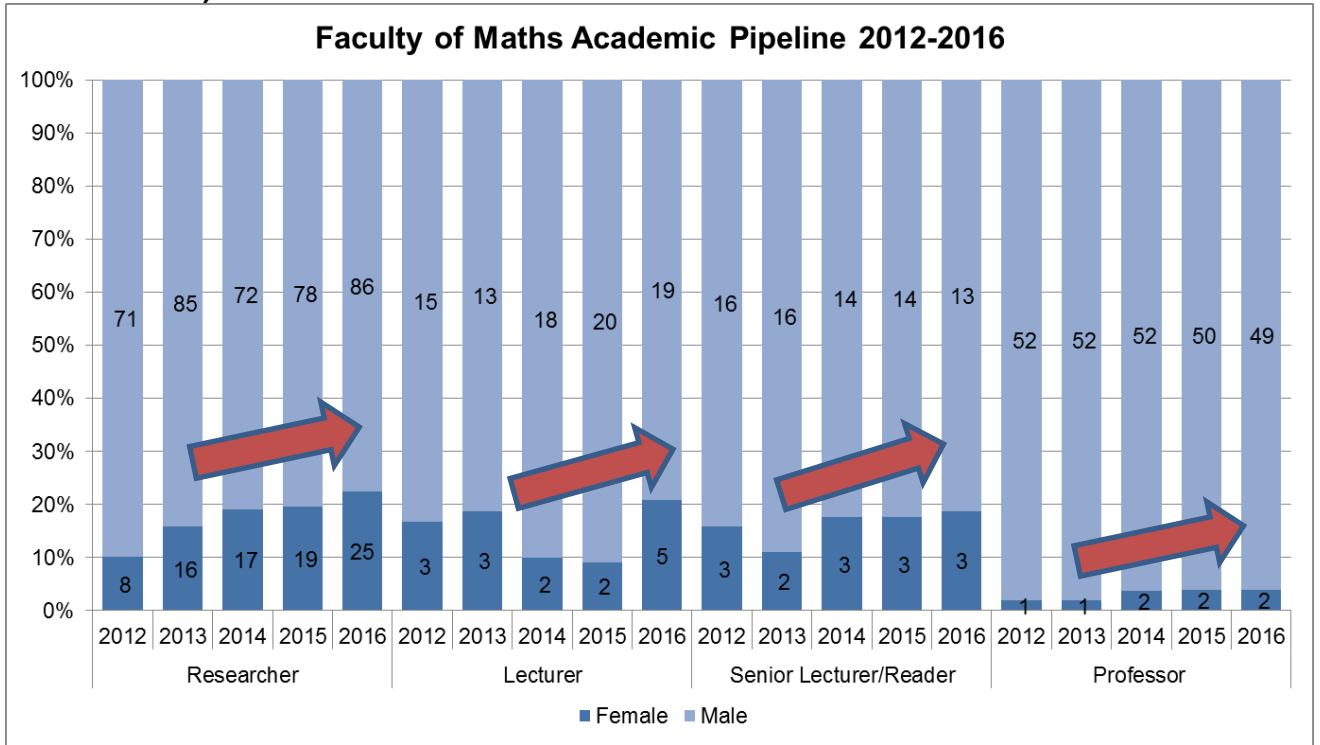


Figure 23: Faculty researcher pipeline by gender (2012-2016) showing research staff increases at all grades from Research Assistant (Grade 5) to postdoc (Grade 7) to independent Research Fellow (Grade 9).

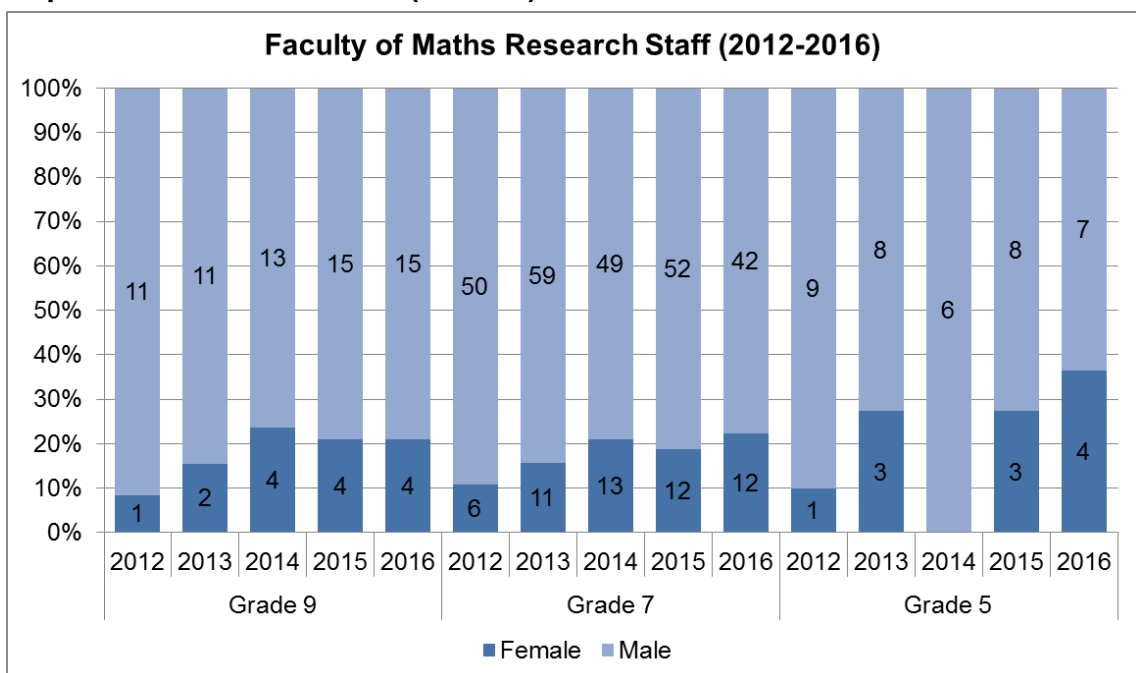


Figure 24: DPMMS academic pipeline by gender (2012-2016) illustrating there are no women Professors but showing progress both in the proportion of women researchers and in Early Career Academics. A retirement in 2016 resulted in there being no women in Senior Lecturer/Reader positions.

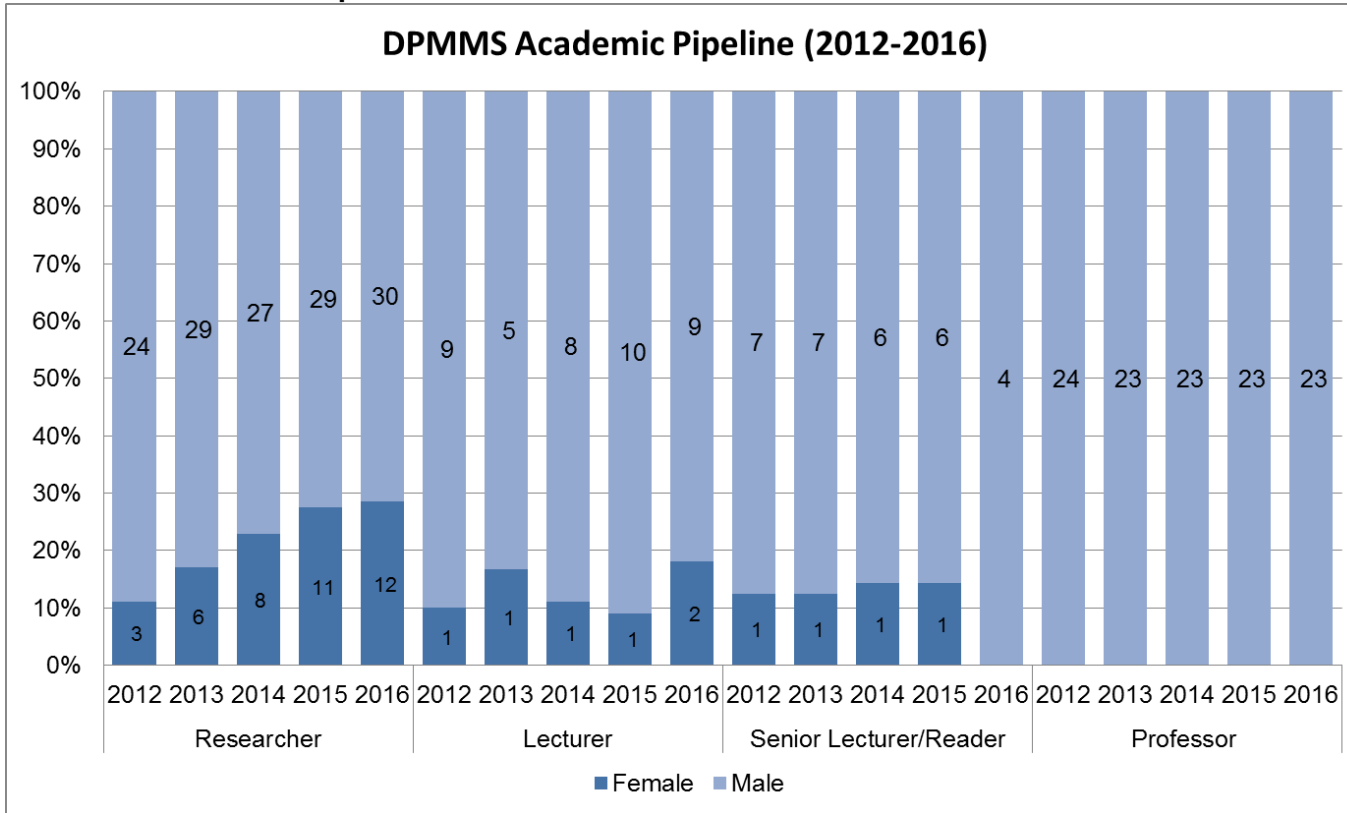
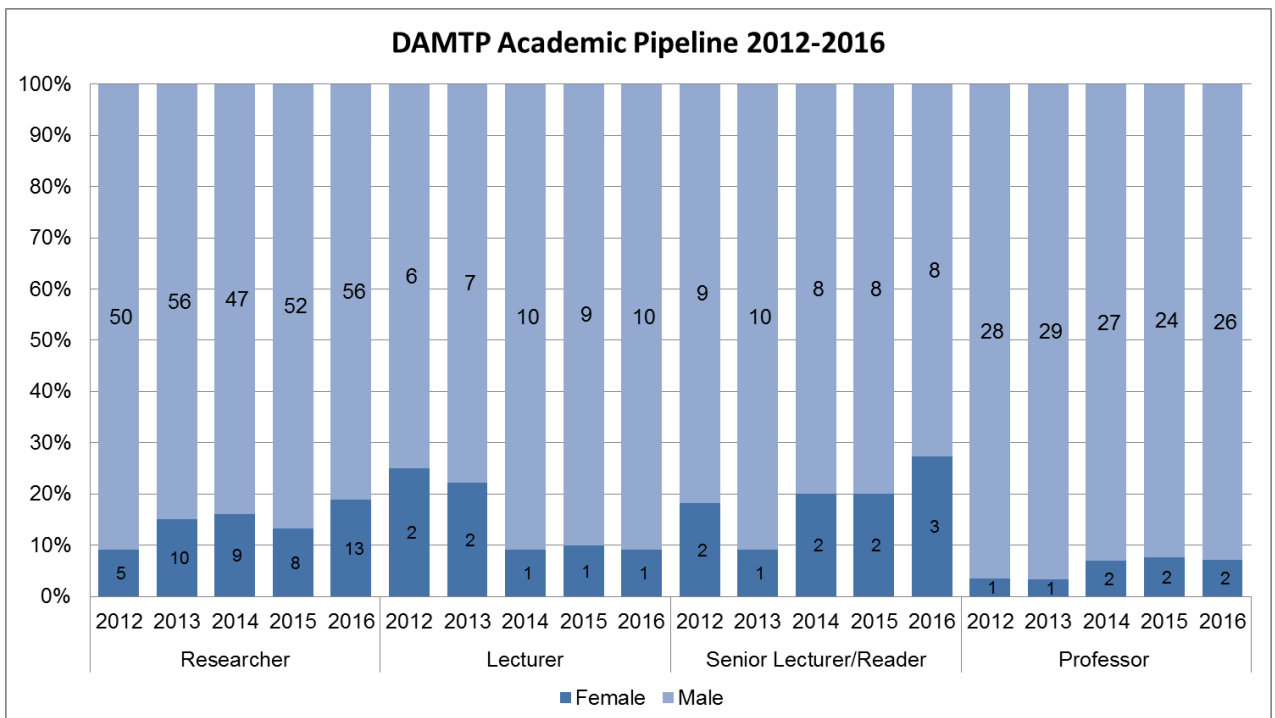


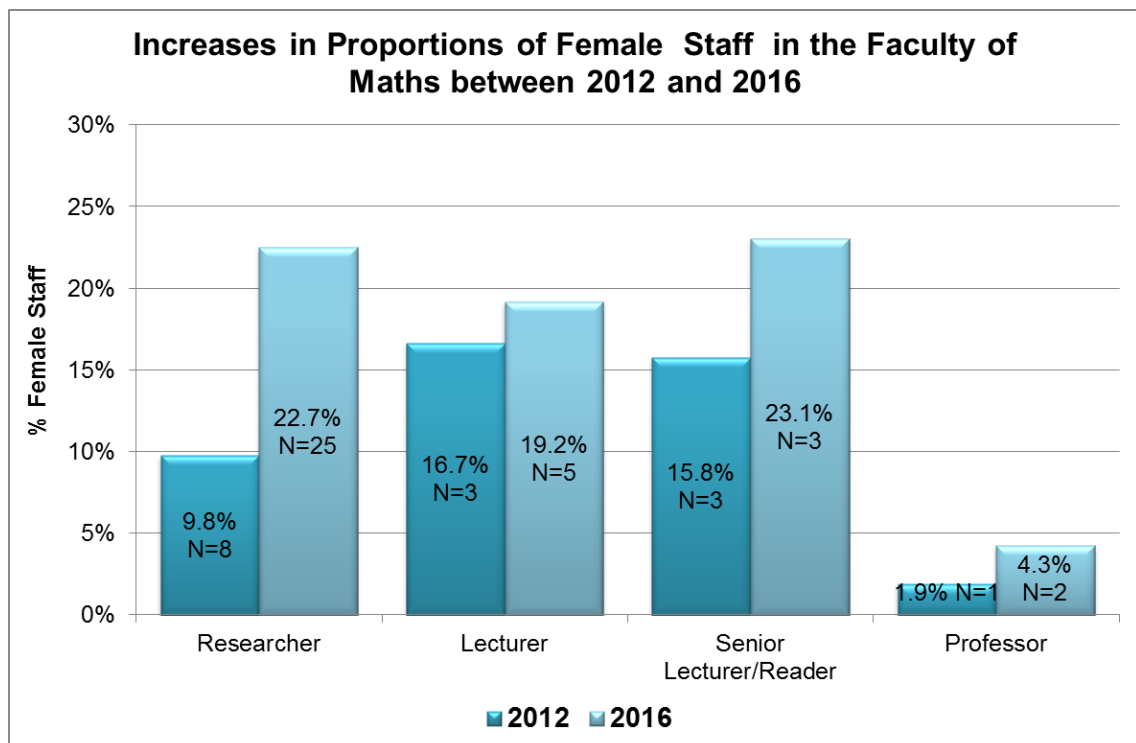
Figure 25: DAMTP academic pipeline by gender (2012-2016) illustrating the changing profile of women in academic and research positions due to both recruitment as well as promotions to Reader and Professor posts.



Academic and research staff actions to date and impact:

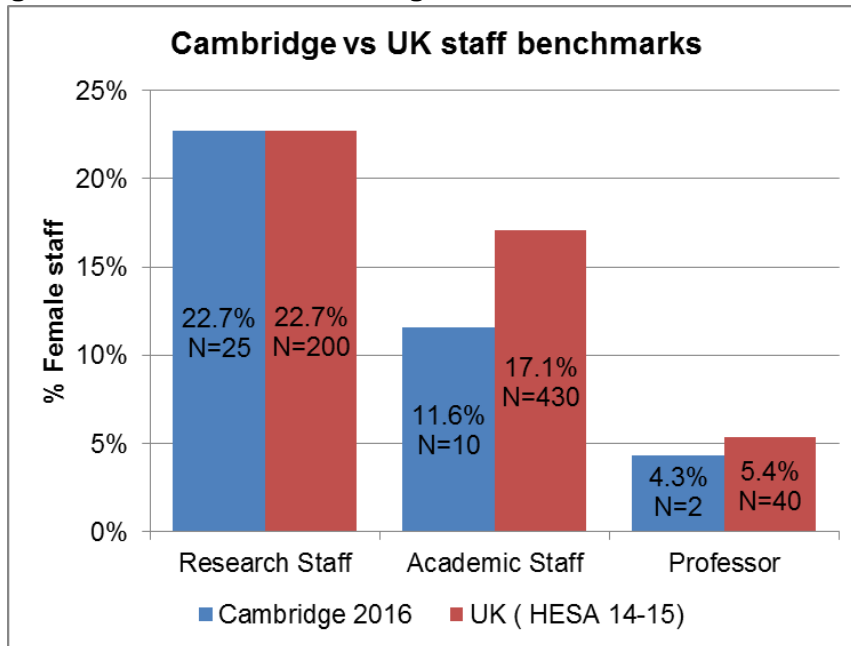
- Improvements in recruitment process, including wording of applications. An additional sentence has been added to all adverts to encourage women to apply (see Recruitment Section below).
- All jobs are advertised via women at maths networks as well as via collaborator networks
- Increased proportion of applications from women to 18% with a high of 50% for specific recruitments.
- Four new women lecturers have been appointed in last three years including Corfield Lecturer in association with Murray Edwards College (women only).
- A new endowment from a donor enabled establishment of the Corfield Lectureship. This innovative new lectureship was advertised with specific requirements to develop the role of women in Mathematics. This post was advertised alongside 3 other lectureship positions in DPMMS. The recruitment statistics for these position were as follows: regular DPMMS lectureships 179 applications, 18.4% F; Corfield Lectureship 95 applications, 50% F. Overall the Department shortlisted 10 candidates, 40%F with 4 appointments 50%F. (see also Section 5.1 below)
- DAMTP will appoint to the Sheila Edmonds Lectureship with all female Newnham College (similar in remit to Corfield Lectureship) by summer 2017 and is in talks with another College about a third such position. Overall, these lectureships represent a financial commitment of ~£4.5million.
- Increased E&D training completion rates especially for those involved in appointments (>95% of all academic staff have completed the training)
- Researchers applying for fellowships are offered application support and mock interviews.
- Academic staff supported through annual University promotions process as well as being mentored through probation (see Promotions section below). All DAMTP female academics have been promoted in the last 5 years (apart from new appointment in December 2016).

Figure 26 illustrates the impact of Faculty initiatives over between 2012 and 2016. There is a noticeable change in the proportions of female staff in the Faculty with a significant increase in female researchers as well as in the number of academic women.



- Despite the progress that has been made over the last 3 years there is still work to be done as proportion of women are below national benchmarks across academic and professorial categories (Figure 27)

Figure 27: HESA Benchmarking for Academic and Research staff



SILVER ACTIONS

10. To increase numbers of women research and academic staff

10.1 Actively encourage all those involved in recruitment and promotion at any level to undertake unconscious bias training

10.2 Continue to use Women's networks to advertise posts. Alert HoDs of other Institutions when new posts become available

10.3 Departments to maintain a database of seminar speakers, former students, contacts made at conferences. Monitor for appropriate gender representation and use to encourage applications for new positions.

10.4 DPMMS to support an additional post in Murray Edwards College to support Corfield Lecturer (joint CTO/SRA).

10.5 Appointment to new Lectureship in DAMTP in conjunction with Newnham College.

10.6 Consider mechanisms of support for dual career academics to combat competition from US and elsewhere

11. Career Development for academic and research staff

11.1 Continue to support career development of new and existing academic staff through probation and promotions processes

11.2 Monitor success rate of researcher increments by gender and Department

11.3 Exit surveys for collation of destinations of staff, particularly researchers

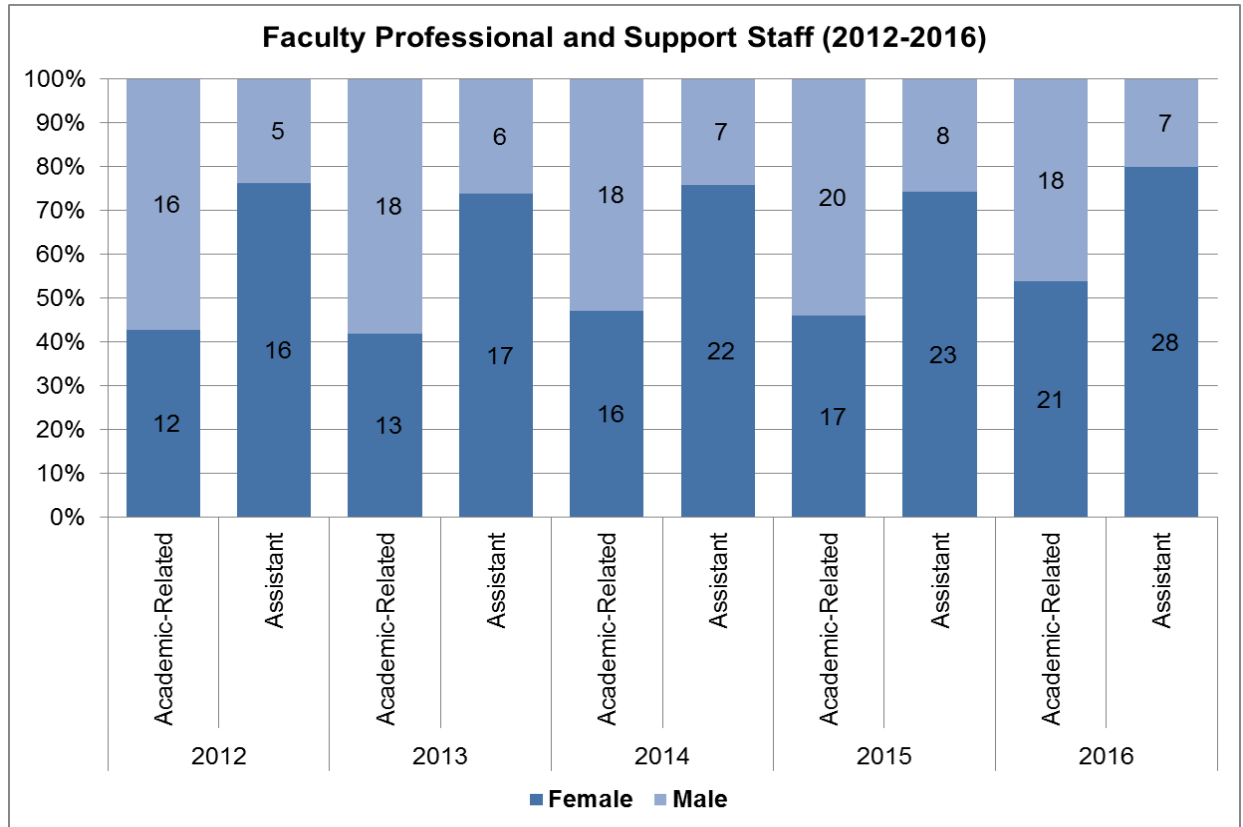
19. To monitor workload for all academic staff

19.2 Consider committee representation by gender and additional responsibilities/core hours recommendations as part of annual workload review

19.3 To increase representation without overburdening the small number of academic women, College Teaching Officers and Research Fellows will be encouraged to put themselves forward for committee membership

Professional and Support Staff

Figure 28: Faculty Professional and Support Staff (2012-2016) showing the proportions of women in Professional and support Services has remained fairly constant over the last 5 years. All changes are a result of staff turnover and recruitment.



- There is not a clear path for the promotion of professional and support staff in the University. However, a number of Faculty PSS have benefitted from secondment opportunities to support career development and movement across the University (see also Section 5.2 below).

SILVER ACTIONS

12. Career Development for professional and support staff (PSS)

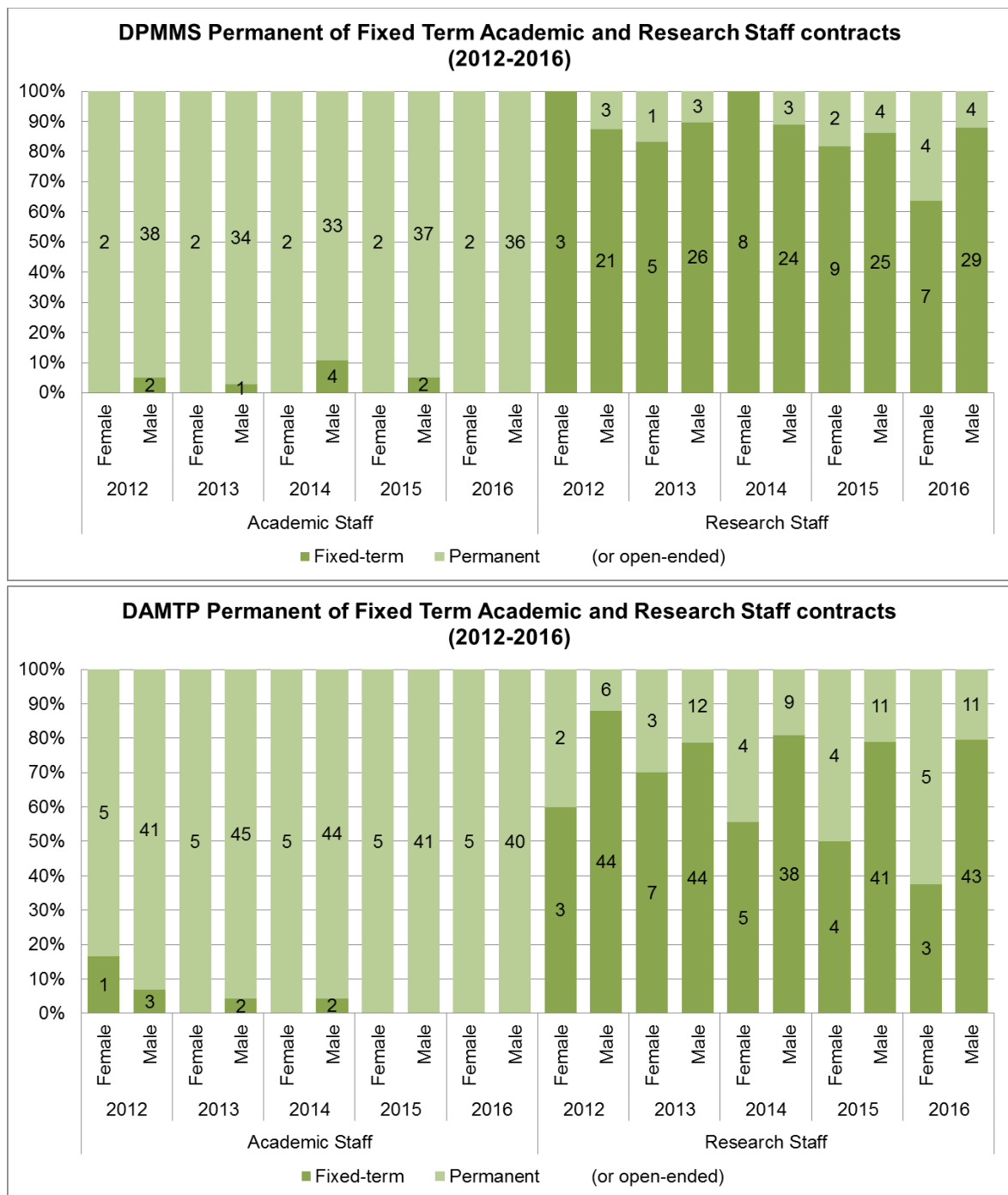
12.1 Continue to support secondment and related opportunities for PSS.

12.2 PSS across the Faculty will continue to be appraised on an annual basis.

- (ii) Academic and research staff by grade on fixed-term, open-ended/permanent and zero-hour contracts by gender

Comment on the proportions of men and women on these contracts. Comment on what is being done to ensure continuity of employment and to address any other issues, including redeployment schemes.

Figure 29: Academic and Research Staff on fixed-term, open-ended/permanent contracts by gender and Department. The charts show there are a small number of fixed term academic staff (temporary lectureships, all male). There are no staff on zero hours contracts.



Previous actions & impact:

- Increased proportion of women on open ended contracts over last 5 years illustrates that the Faculty is retaining women e.g. a number of female researchers have benefitted from contract extensions facilitated via Departmental funding
- Researchers applying for fellowships are offered application support and mock interviews.

The Faculty was eager to help me at every stage when I applied for a five-year EPSRC Fellowship. My colleagues gave me lots of helpful comments on my draft proposal, and even gave me a very realistic mock interview. I'm very grateful for all the support I received. **Female Research Fellow**

- Researchers are informed of opportunity to apply for salary increments three times a year (10 applications in 2016 & 2017, 30% Female, 90% success rate)
- Researchers have mentors as well as receiving career advice from their PI and support, including mock interviews, is provided to help with job applications
- All researchers have been appraised in DAMTP in the last 18 months and the process will be completed in DPMMS by end 2017
- Promotion of redeployment support (following 13% positive response in 2014 staff survey). The 2017 focus group showed appreciation for the new support put in place by the Faculty for researchers in the last year of their contract, including mock interviews, but also revealed a lack of awareness of the breadth of support available

SILVER ACTIONS

11. Career Development for academic and research staff

- 11.1 Continue to support career development of new and existing academic staff through probation and promotions processes
- 11.2 Monitor success rate of researcher increments by gender and Department
- 11.3 Exit surveys for collation of destinations of staff, particularly researchers
- 11.4 Develop redeployment factsheet to highlight available support

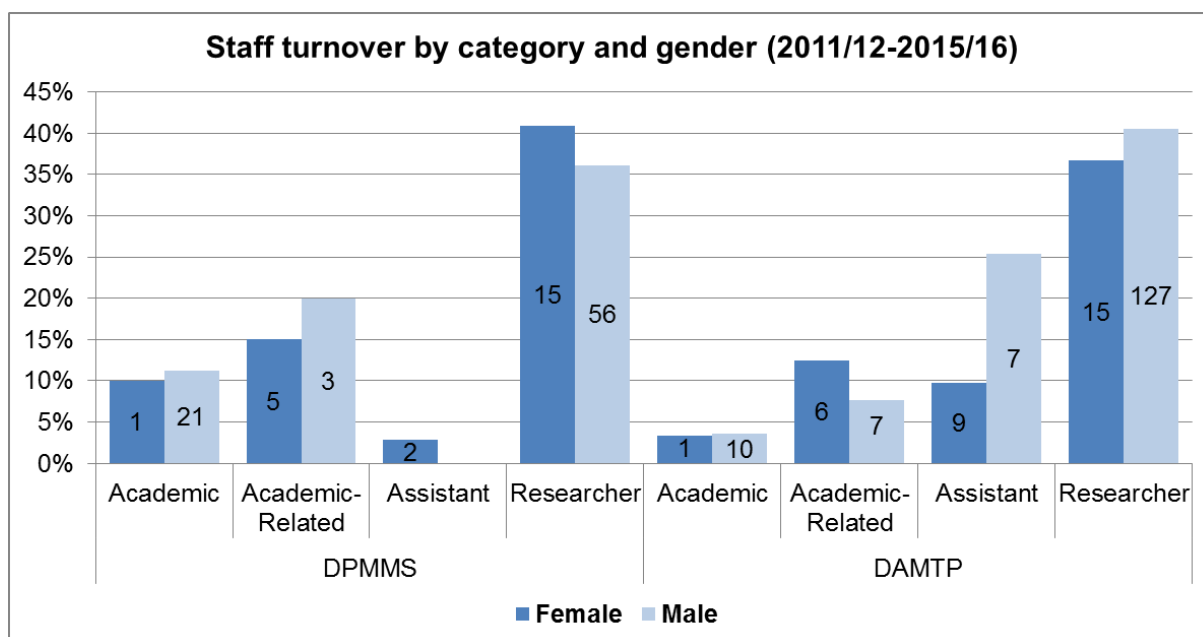
(iii) Academic leavers by grade and gender and full/part-time status

Comment on the reasons academic staff leave the department, any differences by gender and the mechanisms for collecting this data.

Table10: Faculty of Mathematics Staff turnover by Department, staff type and gender

| Year | Staff Group | DAMTP | | DPMMS | |
|---------|------------------|--------|------|--------|------|
| | | Female | Male | Female | Male |
| 2011/12 | Academic | 0 | 2 | 0 | 1 |
| 2011/12 | Academic-Related | 1 | 0 | 0 | 0 |
| 2011/12 | Assistant | 2 | 1 | 0 | 0 |
| 2011/12 | Researcher | 4 | 19 | 5 | 10 |
| 2012/13 | Academic | 1 | 2 | 0 | 6 |
| 2012/13 | Academic-Related | 2 | 3 | 0 | 0 |
| 2012/13 | Assistant | 0 | 2 | 0 | 0 |
| 2012/13 | Researcher | 1 | 24 | 1 | 12 |
| 2013/14 | Academic | 0 | 0 | 0 | 7 |
| 2013/14 | Academic-Related | 2 | 1 | 3 | 1 |
| 2013/14 | Assistant | 3 | 2 | 0 | 0 |
| 2013/14 | Researcher | 3 | 40 | 2 | 16 |
| 2014/15 | Academic | 0 | 4 | 0 | 3 |
| 2014/15 | Academic-Related | 1 | 2 | 0 | 0 |
| 2014/15 | Assistant | 2 | 1 | 1 | 0 |
| 2014/15 | Researcher | 6 | 22 | 3 | 8 |
| 2015/16 | Academic | 0 | 2 | 1 | 4 |
| 2015/16 | Academic-Related | 0 | 1 | 2 | 2 |
| 2015/16 | Assistant | 2 | 1 | 1 | 0 |
| 2015/16 | Researcher | 1 | 22 | 4 | 10 |

Figure 30: Staff turnover by category, department and gender (2011/12-2015/16) illustrating higher turnover of research staff in both Departments (due to the nature of short term contracts)



- Academic leavers in DAMTP due almost exclusively to retirement.
- In DPMMS , some academic turnover is due to retirement but also competition for highly qualified staff with US & elsewhere outside the UK (accounting for 83% of resignations with 50% staying in Cambridge for a year or less). Despite the positive feedback on the DPMMS working environment, Cambridge salaries and support for dual career couples cannot compete with packages offered in the US and Switzerland.
- There were a number of academic-related and assistant staff leavers as part of administrative re-organisation and creation of shared services teams in 2014. The positive impact of shared services re-organisation was demonstrated by extremely affirmative feedback across all teams in a 2016 review (Faculty-wide survey and interviews with key staff). The shared services have cemented relationships between the two Departments.
 - Over 80% of respondents were clear about the remit of each of the shared service teams
 - 85% of all respondents felt that their queries were dealt with in a timely manner and resolved to their satisfaction
 - The proportion of respondents who rated the staff knowledge and expertise levels of the shared service teams as being Very Satisfactory or Satisfactory was over 90% for all four teams.
- Slightly higher turnover of male researchers in DAMTP due to abnormally high number of leavers in 2010-11. See also Section 5.3 (iii) on postdoc destinations below
- In DPMMS a number of recent contract extensions have been provided for researchers which has particularly benefitted female staff (N=5, 80% Female)

SILVER ACTIONS:

10. To increase numbers of women research and academic staff

10.6 Consider mechanisms of support for dual career academics to combat competition from US and elsewhere

11. Career Development for academic and research staff

11.3 Introduce exit surveys for collation of destinations of staff, particularly researchers

5. SUPPORTING AND ADVANCING WOMEN'S CAREERS

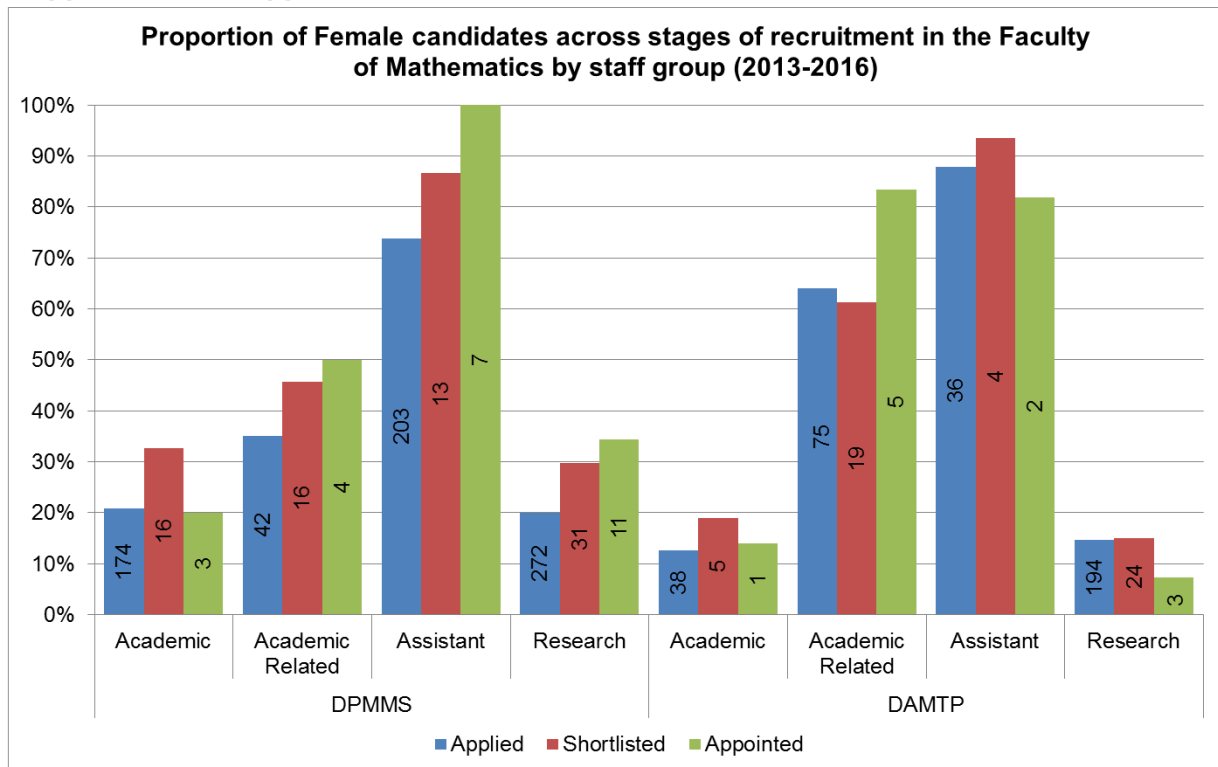
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5.1. Key career transition points: academic staff

(i) Recruitment

Figure 31 highlights the recruitment data collected since 2013 via a University web-based system. Across all staff groups in DPMMS a higher number of women were appointed than applied



Previous actions & impact:

Changes to Faculty policy and practice which impact on equality and diversity in recruitment include the following:

- Anyone involved in recruitment at any level must have completed the University's online E&D training. The level of online E&D training completion has increased from <10% in 2013 to >85% of ALL staff and >95% of ALL academic staff across both Departments.
- A number of members of the Faculty have attended specialist Unconscious Bias training, but this has yet to be available to all staff (the University has just launched an online course in January 2017).
- Selection committees always have both genders represented with academic selections also having representation from outside the Department
- In all of our job advertisements for academic and research posts we now include the paragraph:
'The University of Cambridge values diversity and is committed to equality of opportunity. The Department would particularly welcome applications from women, since women are, and have historically been, underrepresented on our academic/research staff.'
- Adverts are posted on women in maths national and international mailing lists

- In addition, we actively seek applications from appropriately qualified women, contacting various potential female candidates to encourage their application.
- Of particular note was the 2015 recruitment for a lectureship in DPMMS following a new endowment. The objective of the Corfield Lectureship, in conjunction with the women only Murray Edwards College, was not only to recruit a pure mathematician with excellence in research but one who would also be actively involved in activities to raise the profile of women in Mathematics. The job advert included the following:

'The post involves research and other activities aimed at promoting women's participation and achievement in Mathematics. The successful candidate will have a genuine interest in and commitment to developing the role of women in Mathematics, and an interest in establishing evidence-based programmes that will target women at all levels (school and college, University and beyond). In addition the successful candidate will need to demonstrate the potential to be a strong role model to female mathematicians.'

- This post was advertised simultaneously with 3 other lectureships and an intensive search carried out for strong candidates including inviting a number of potential candidates to visit the Department and College. The two regular lectureships received 179 applications (18.4% women) with the Corfield attracting 95 candidates (50% women). It was noted that the strongest candidates were also being sought by other top institutions at the same time. Overall ten candidates were shortlisted (40% women) and two women and two men were appointed.
- It is hoped that this innovative position alongside the additional female lecture appointments will bear fruit in the coming years, providing strong role models for students of all ages and encourage more women to study maths.



Corfield Lecturer
Dr Holly Krieger

SILVER ACTIONS

10. To increase numbers of women research and academic staff

- 10.1 Actively encourage all those involved in recruitment and promotion at any level to undertake unconscious bias training
- 10.2 Continue to use Women's networks to advertise posts. Alert HoDs of other Institutions when new posts become available
- 10.3 Departments to maintain a database of seminar speakers, former students, contacts made at conferences. Monitor for appropriate gender representation and use to encourage applications for new positions.
- 10.4 DPMMS to support an additional post in Murray Edwards College to support Corfield Lecturer (joint CTO/SRA).
- 10.5 Appointment to new Lectureship in DAMTP in conjunction with Newnham College with a potential third appointment with another College.
- 10.6 Consider mechanisms of support for dual career academics to combat competition from US

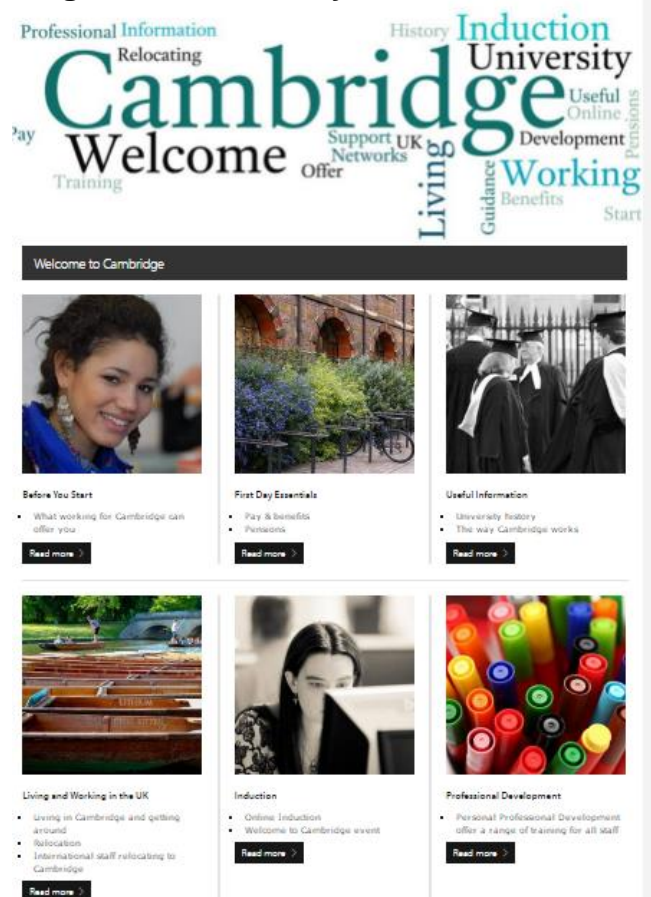
(ii) Induction

Describe the induction and support provided to all new academic staff at all levels. Comment on the uptake of this and how its effectiveness is reviewed.

Previous actions & impact:

- All new members of staff are now given an Induction Pack (in response to staff survey figures of 35% finding local induction helpful with 35% ticking not applicable in 2014)
- New Academic Staff are assigned mentors, a more senior academic in a subject area similar to the new appointee. The mentors, alongside the Head of Department, provides support during the probation process and for promotion. Mentors are expected to keep in touch with their mentees throughout the probationary period and frequently until after the first promotion. All research staff have a mentor and a PI, both of whom are responsible for career advice.
- Research Staff Induction is carried out by The HR team and provides information on the University Office of Postdoctoral Affairs as well as practical help e.g.setting up bank accounts.
- All staff are also directed to the University induction webpages which were completely revised in 2016 (Figure 32).

Figure 32: University Induction hub



SILVER ACTIONS

16. To increase awareness and up-take of family-friendly and work life integration policies

16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website and induction packs

18. To improve communication across Departments and the Faculty

18.1 Update induction pack for Faculty and support development of School of Physical Sciences Induction Pack

15. To collect feedback from all staff groups

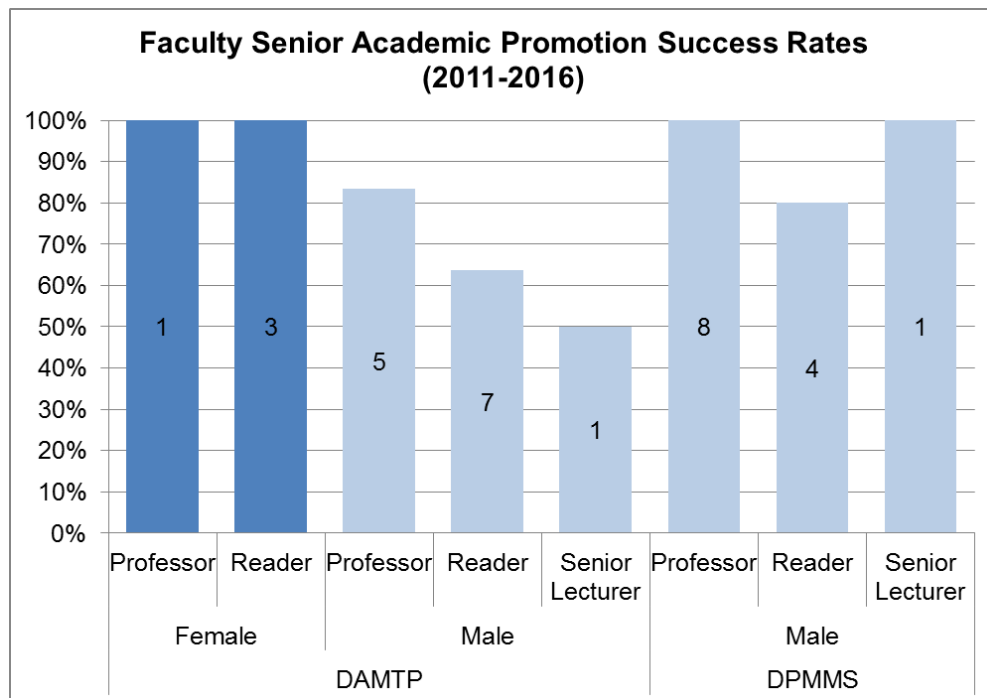
15.1 Faculty staff survey run in 2018 to seek feedback on key areas.

(iii) Promotion

Provide data on staff applying for promotion and comment on applications and success rates by gender, grade and full- and part-time status. Comment on how staff are encouraged and supported through the process.

- Senior Academic Promotion is an annual process run by the University in October
- Candidates from both Departments are considered at Faculty, School and University levels
- All academic staff eligible are sent the documentation on an annual basis.
- In both DAMTP and DPMMS, the Head of Department speaks to all eligible staff and is actively involved in providing advice on the timing of applications.
- Staff applying are encouraged to discuss their application with other senior Faculty members and to use the University SAP CV mentoring system as well as attend the SAP open fora which are delivered on an annual basis.
- All members of SAP committees are required to undergo E&D training, both at Faculty and School level and committees have both genders and external representation.

Figure 33 illustrating the high success rate for Senior Academic Promotions in the Faculty.



- In DAMTP, all eligible female academics with the exception of the new lecturer starting in 2016 have been successfully promoted in the last 5 years (compared to an overall success rate for men of 68% (13/19).
- In DPMMS, where nearly all the women academics are new appointments, there were no women promoted. The comparative success rate for male academics is 93% (Figure 33).
- Unsuccessful candidates are provided with feedback from the promotions committee.
- Research Associates can apply for research contribution increments at three points across the year which are considered at Departmental, School and University levels. Success is often dependent on whether funding is available (e.g. on a grant) but in some cases, the Departments have provided the additional funding required. Between 2016 and 2017 the success rate was 90% (30% female, N=10).

SILVER ACTIONS

10. To increase numbers of women research and academic staff

10.1 Actively encourage all those involved in recruitment and promotion at any level to undertake unconscious bias training

11. Career Development for academic and research staff

11.1 Continue to support career development of new and existing academic staff through probation and promotions processes

11.2 Monitor success rate of researcher increments by gender and Department

(iv) Department submissions to the Research Excellence Framework (REF)

Provide data on the staff, by gender, submitted to REF versus those that were eligible. Compare this to the data for the Research Assessment Exercise 2008. Comment on any gender imbalances identified.

RAE

- For the RAE 2008 there were 3 different Mathematics panels; Pure Mathematics, Operational Research and Statistics and Applied Mathematics. Cambridge was highly ranked in all three panels.

Table 11: Between the three panels our Mathematics Faculty submitted 126 researchers of whom 114 were male and 12 were female (90.5% male and 9.5% female submitted). All female academic staff were submitted (n=7).

| RAE 2008 | Pure Mathematics | Applied Mathematics | Statistics and Operational Research |
|-----------------|------------------|---------------------|-------------------------------------|
| Staff submitted | 55 | 80 | 16 |
| Score | 3.05 | 3.05 | 3.05 |
| Rank | 4 | 1 | 2 |

REF

- For the REF 2014, HEFCE required all those involved in selection for University REF Committees to undergo E&D training. Mathematics was a single UoA. The University required that all University Officers be considered for submission. There was detailed assessment of all papers put forward by colleagues for submission and the University's code of practice for submission was followed, in particular when deciding not to submit someone.
- The data was more straightforward to get since the gender of those submitted was held in the HEFCE submission database. The Faculty submitted 127 male and 17 female (89 % eligible males and 71% eligible females by HEFCE criterion). All women holding academic positions were submitted.

Table 12: The Faculty did well in the 2014 REF, being placed second in the Overall rankings and second for its research Outputs. However, it ranked behind three other institutions which were placed joint first for Environment (which includes equality and diversity elements) and only eleventh for Impact.

| | Cambridge | UK |
|-------------------------------|-----------|-----|
| % of World Leading Research | 45% | 29% |
| % World Leading Researchers | 35% | 23% |
| % Outstanding Impact Research | 45% | 36% |
| % World Leading Environment | 90% | 44% |

Previous actions and impact

- Appointment of Knowledge Transfer Facilitator, to manage and enhance research impact. She works directly with academics across both Departments, and is establishing a significant range of industrial contacts, a number of which have already provided research funding.
- Faculty Strategic Research Review with an external panel held in 2017, with consideration of equality and diversity across all Faculty activities and data sets (awaiting panel recommendations).

SILVER ACTIONS

14. To support grant applications, outputs and impact for academic staff

14.1 Appoint to new DAMTP Research Facilitator post

14.2 Preparation for REF2021 including impact case studies

14.3 Consider support mechanisms for all REF-eligible women in the Faculty

14.4 Implementation of recommendations from Strategic Research Review

SILVER APPLICATIONS ONLY

5.2. Key career transition points: professional and support staff

(i) Induction

Describe the induction and support provided to all new professional and support staff, at all levels. Comment on the uptake of this and how its effectiveness is reviewed.

(ii) Promotion

Provide data on staff applying for promotion, and comment on applications and success rates by gender, grade and full- and part-time status. Comment on how staff are encouraged and supported through the process.

- Induction pack provided to all new PSS staff
- There is no promotions exercise for administrative staff in the University but the Faculty supports a number of initiatives which facilitate career development including training, a review of career pathways and skills as well as secondments and regrading.
- Secondments are a valuable tool for individual's career development, particularly internal secondments to other institutions within the University which may be at a higher

grade. Examples in the Faculty include Undergraduate manager seconded to cover maternity leave of Graduate Office Manager and an Undergraduate team member returning from secondment in another School to cover Undergraduate manager's secondment. These secondments enable practice sharing across the Departments as well as between Schools.

- In 2017, there was a 100% success rate for the contribution increment exercise for administrators. Nine people were put in for a contribution point increase (8 female/1 male) and 1 (female) person for a contribution payment. Eight people received an increment (including the male) and 2 people a one off payment.

SILVER ACTIONS

12. Career Development for professional and support staff (PSS)

12.1 Continue to support secondment opportunities, and related initiatives such as job shadowing, for PSS

12.2 PSS across the Faculty will continue to be appraised on an annual basis.

13. To increase numbers attending personal and professional development opportunities

13.1 Locally delivered bitesize training sessions covering a range of topics

5.3. Career development: academic staff

(i) Training

Describe the training available to staff at all levels in the department. Provide details of uptake by gender and how existing staff are kept up to date with training. How is its effectiveness monitored and developed in response to levels of uptake and evaluation?

- Training is available from various sources including Personal and Professional Development (PPD), IT, Library and Safety Office
- PPD offer a wide range of courses including Leadership, Communication Skills, Assertiveness as well as specific training offered for staff review and development (see Table 13). The highest uptake in the Faculty was for the following courses: admissions training, communication skills, Staff review and development, leadership, lecturing, supervising and managing staff performance.

Table 13 PPD training uptake (2011-2015)³ showing the proportion of women taking up training is higher than the proportion of female staff for each staff category

| | Female | Male | %F uptake | %F staff (2016) |
|------------|--------|------|-----------|-----------------|
| Academic | 10 | 56 | 15% | 10% |
| Researcher | 47 | 125 | 27% | 23% |
| PSS | 144 | 71 | 67% | 59% |

³ 2016 Data not available from University

Previous actions and impact

- The Faculty widely promotes the programme of events organised by the University E&D team (termly calendars sent to all staff) and training including online modules in E&D and unconscious bias (UB). A face to face UB session was hosted by the Faculty in 2016 with 76 attendees (51% female) and a high proportion of Faculty academic staff attended a UB event in 2014 in the Cavendish Lab.
- >450 staff training events attended over last 3 years (44.5% female)
- Departmental-specific training includes a Researcher Development Programme for PhD students and researchers
- New staff informed about training opportunities at induction and updated via bi-monthly Newsletters, Termly PPD calendar and the PPD website.
- 2014 staff survey indicated that the majority of staff felt well-informed about training opportunities (only 10% disagreed, with 71% agreeing they knew where to find information about training).

SILVER ACTIONS

13. To increase numbers attending personal and professional development opportunities

- 13.1 Locally delivered bitesize training sessions covering a range of topics
- 13.2 Training opportunities identified and encouraged during appraisals
- 13.3 Faculty to trial Leadership workshops with PIs

15. To collect feedback from all staff groups

- 15.1 Faculty staff survey run in 2018 to seek feedback on key areas.

(ii) Appraisal/development review

Describe current appraisal/development review schemes for staff at all levels, including postdoctoral researchers and provide data on uptake by gender. Provide details of any appraisal/review training offered and the uptake of this, as well as staff feedback about the process.

- The University has a centrally approved Staff Review and Development (SRD) programme in place which has been adapted to the needs of the Faculty. Across the University uptake of SRD is low.
- 2014 Faculty staff survey data shows 35% of respondents felt they did not receive regular and constructive feedback on their performance

Previous actions and impact

- The DAMTP SRD scheme for researchers was introduced in 2015 and ALL research staff were appraised by the end of December 2016. Points for discussion at review meetings explicitly include career advancement and work-life balance. In advance of the DAMTP exercise, bespoke training for both reviewers and reviewees was provided by PPD.

- In DPMMS all new academic staff are appraised annually by the HoD. Researcher career development discussions have been informal to date via mentors but an appraisal schedule had been drawn up to ensure all researchers are offered an appraisal by the end of 2017.

SILVER ACTIONS

11. Career Development for academic and research staff

11.1 Continue to support career development of new and existing academic staff through probation and promotions processes

11.2 Monitor success rate of researcher increments by gender and Department

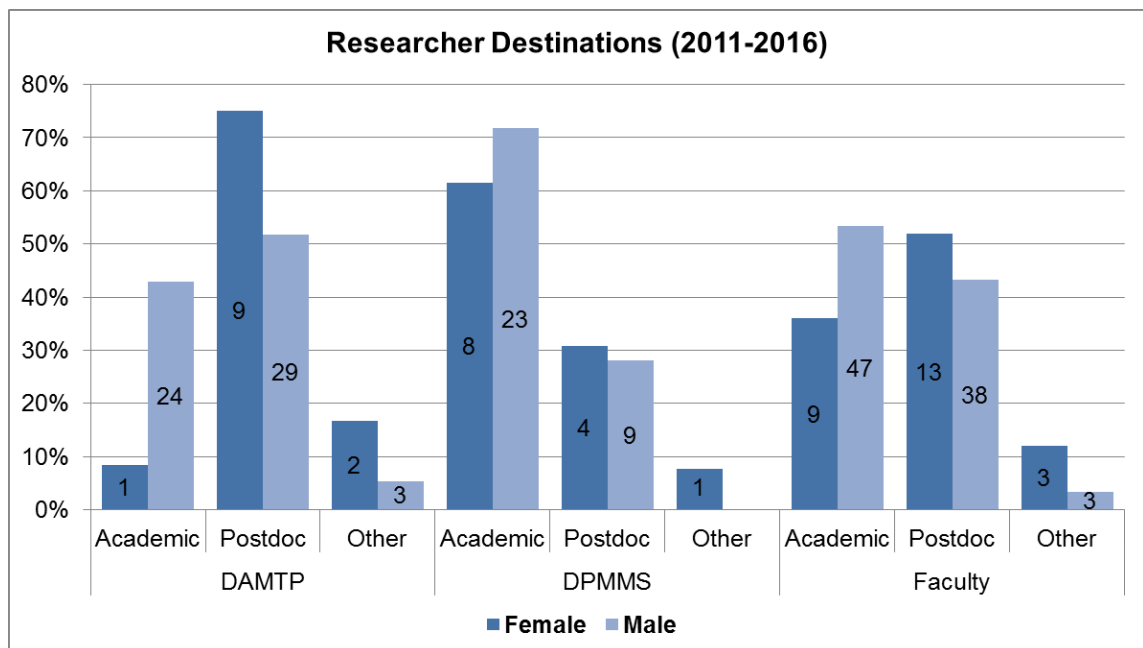
11.3 Exit surveys for collation of destinations of staff, particularly researchers

(iii) Support given to academic staff for career progression

Comment and reflect on support given to academic staff, especially postdoctoral researchers, to assist in their career progression.

- New Academic staff are mentored by HoD (DPMMS) or mentor (DAMTP) though their probation period and beyond, continuing at least until first promotion.
- Reduced teaching loads are common in the first year of appointment for both genders.
- High promotion success rates for academic staff (see Section 5.1 (iii) above)
- All Academic staff are entitled to sabbatical leave (one term for every six terms of service) which permits a focus on research without any teaching or administration responsibilities.
- The impact of career development support for postdocs is evidenced by the number who have attained academic positions elsewhere or been supported in their applications for independent fellowships.

Figure 34: Data collected from PIs on researcher destinations shows that of 93 postdocs who have left in the last 5 years, 35% of female and 51% of male postdocs gained academic/tenure track positions on leaving Cambridge (43% in the UK, 18% in the EU, 18% in the US and 20% elsewhere)⁴.



⁴ Note: Data returned from 30 PIs representing ~35% of postdoc leavers in last 5 years.

Support given to students (at any level) for academic career progression

Comment and reflect on support given to students at any level to enable them to make informed decisions about their career (including the transition to a sustainable academic career).

- Undergraduate students have access to Careers Service and receive additional careers support in College.
- The Faculty runs two schemes to assist with transition to postgraduate research: Post-Master's Placement (PMP) scheme and the Summer Undergraduate Research Opportunities (SUROP). Bursaries (up to £2k per student) are provided via funding from the two Departments as well as donations, College studentships and matched funding from host institutions.

Table 14: The gender breakdown of summer students reflects that of the undergraduate Maths cohort. Provisional 2017 numbers indicate that 48 students will be supported by bursaries (21% Female).

| Year | PMP Female | PMP Total | SUROP Female | SUROP Total |
|--------|------------|-----------|--------------|-------------|
| 2013 | 4 | 12 | 2 | 10 |
| 2014 | 1 | 15 | 6 | 28 |
| 2015 | 1 | 13 | 3 | 28 |
| 2016 | 3 | 14 | 4 | 30 |
| Totals | 9 (17%) | 54 | 15 | 96 (16%) |

What was achieved by [the student] during the period of the project went far beyond our expectations. *PMP host*

Doing a summer project gave me a valuable insight into how research works, which was particularly useful when deciding to do a PhD. *Felicity, SUROP, now a PhD, student*

- In 2016, 73% of SUROP/PMP students felt their background as a mathematician enabled them to see problems in a different and creative way; 62% agreed their plans hadn't changed, but they were aware of career options that they might not have thought of without the placement experience
- Part III students are supported via Part III drop-ins, catch-up lectures, study groups and Part III seminar series.
- PhD students have wide range of training opportunities. These include:
 - The DAMTP/DPMMS Researcher Development (RD) Programmes. Particularly geared to equipping students with skills for life after PhD (both for academic and other careers). Dedicated person in charge of RD in each department.
 - Centrally provided training including GRAD School and other courses offered by PPD and the Careers service
 - The Researcher Development Programmes (RDP) have detailed evaluation proforma for each event including recommendations for actions to improve future events
 - Training for Research students is monitored via Researcher Development logs
- PhD students all have an academic advisor (independent of their Supervisor) working in a cognate area
- Individual research groups sometimes run special student seminar series which are financially supported by the Faculty.

- >350 students attended RDP events in 2015/16
 - The student survey showed that:
 - the proportion of all students (undergraduate and graduate) who felt that the Faculty promotes career opportunities rose from 73% in 2014 to 84% in 2016 (from 68% to 83% for female students).
 - All students commented favourably on the wider range of careers promoted, in marked contrast with the previous survey.

SILVER ACTIONS

8. Careers support and transferable skills development.

- 8.1 Review researcher development programmes and offer one Faculty-wide programme (monitoring attendance by gender). Extend researcher development programme with interactive skills lectures including topics like job hunting and leadership
- 8.2 Encourage more female participation in summer placements, including PMP (e.g. holding short informal talks/workshops by female students who have done a summer placement)
- 8.3 Publicise careers info including careers for mathematicians events and industrial seminars as part of CCA programme
- 8.4 Review graduate student practices between two Departments and develop one student handbook which covers all PhD courses.
- 8.5 Extend and monitor buddy scheme for new PhD students.

(iv) Support offered to those applying for research grant applications

Comment and reflect on support given to staff who apply for funding and what support is offered to those who are unsuccessful.

- The Faculty does not impose a target or expectation on staff regarding the number of applications made per year, or even for the amount of money received. This would seriously detract from the quality of the research atmosphere we foster here.
- Staff are definitely encouraged and supported to seek grant support as part of a culture in which applying for grants is seen as worth doing because it benefits the whole Faculty community.

Table 15: Grant application and success rates over the last 5 years by gender illustrating similar success rates but a lower on average application value for women. This is due in part to the seniority of applicants (less women at Professorial levels). The proportion of female applications mirrors the proportion of female academic staff (11%).

| 2010-2016 | Male | Female |
|--------------------------|--------------|-------------|
| Applications | 325 | 36 (11%) |
| Awards | 116 | 11 |
| Application success rate | 36% | 31% |
| Application Value | £168,812,261 | £11,655,590 |
| Awards Value | £53,472,447 | £3,914,927 |
| Application (Average) | £519,422 | £323,766 |
| Award (Average) | £460,969 | £355,902 |

Actions to date and impact

- Annual seminar for Grant Applicants provided as part of Researcher Development Programme.
- Mock interviews offered to all fellowship applicants.
- New finance officers providing elevated levels of support for applications
- Departmental funding has been used to extend contracts (1-2 years) for a number of female researchers when grant applications have been unsuccessful with support for additional applications provided.
- Dr Carola-Bibiane Schönlieb appointed as the Director of the new Cantab Capital Institute for the Mathematics of Information (CCIMI), a collaboration between DAMTP and DPMMS following a significant donation.
- Dr Alexandra Freeman appointed as the Executive Director of the Winton Centre for Risk and Evidence Communication endowed by a generous donation by the David and Claudia Harding Foundation and the Winton Charitable Foundation.

SILVER ACTIONS

14. To support grant applications, outputs and impact for academic staff

14.1 New Research Facilitator post to support grant applications and post-award management

14.5 To encourage and support more grant applications from women in the Faculty, including new lecturers

SILVER APPLICATIONS ONLY

5.4. Career development: professional and support staff

(i) Training

Describe the training available to staff at all levels in the department. Provide details of uptake by gender and how existing staff are kept up to date with training. How is its effectiveness monitored and developed in response to levels of uptake and evaluation?

(vi) Appraisal/development review

Describe current appraisal/development review schemes for professional and support staff at all levels and provide data on uptake by gender. Provide details of any appraisal/review training offered and the uptake of this, as well as staff feedback about the process.

(ii) Support given to professional and support staff for career progression

Comment and reflect on support given to professional and support staff to assist in their career progression.

Previous actions and impact

- Professional and Support Staff are given the same opportunity and access to training as for academic and research staff.
- Encouragement to attend training courses as appropriate, specifically raised in appraisals as well as throughout the year.

The workshop gave me a good understanding of how to prepare for an effective discussion, both as a line manager and a reviewee. I particularly valued being able to carry out this training in the Faculty with my colleagues so everyone would have the same knowledge and expectations. *Female PSS line manager*

The appraisal process was a positive experience which gave me an opportunity for a constructive review of my work progress. It also provided a way of balancing my personal needs and ambitions with the Faculty's overall objectives. *Female PSS appraisee*

- Annual appraisal completed for all PSS staff from 2015/16 in DPMMS and 2016 in DAMTP for career development support. Specific training for appraiser and appraisees run in the Faculty in 2016.
- E&D training completion increased to 91% across all PSS
- Faculty-wide PSS meetings (termly) introduced in 2016 which all staff attend
- See also Section 5.2 above

SILVER ACTIONS

12. Career Development for professional and support staff (PSS)

12.1 Continue to support secondment and related opportunities for PSS.

12.2 PSS across the Faculty will continue to be appraised on an annual basis.

13. To increase numbers attending personal and professional development opportunities

13.1 Locally delivered bitesize training sessions covering a range of topics

13.2 Training opportunities identified and encouraged during appraisals

5.5. Flexible working and managing career breaks

Note: Present professional and support staff and academic staff data separately

(i) Cover and support for maternity and adoption leave: before leave

Explain what support the department offers to staff before they go on maternity and adoption leave.

- The University aims to provide maternity benefits which exceed the statutory requirements. The policy applies to all female employees, regardless of their length of service and entitlement to statutory maternity benefits. Risk assessments of working environments are routinely carried out in order to protect the safety of mother and child for any employee who is, or may become, pregnant.
- For academic staff, substitute teaching funds may be provided and for assistant staff posts funded by central University funds and for academic-related staff, funding may be sought for a temporary appointment from the relevant School.
- The SPACE Network (Supporting Parents and Carers & Cambridge) was launched in January 2017 to provide a staff support network and a conduit for policies and initiatives being developed across the University.
- The University has committed to the My Family Care (MFC) service providing emergency care for dependents where work demands mean that normal care provision is not possible.
- The staff survey revealed 21% of the respondents had childcare responsibilities with 10% having caring responsibilities not involving children. 28% of respondents disagreed that they were happy with the University's childcare provision.



SILVER ACTIONS

16. To increase awareness and up-take of family-friendly and work life integration policies

16.1 Promote SPACE events and host a SPACE event at CMS.

16.2 Promote My Family Care Service and offer funds to pay for a number of days per year of the service for staff.

16.3 Promote the Shared Parental Leave policy and enhanced shared parental pay to all relevant staff.

16.4 Support applications to the Returning Carers Scheme.

16.5 Ensure University wellbeing initiatives are shared across the Faculty.

16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website.

16.7 Develop local guidance on how to promote and support flexible working.

16.8 Document to be provided to all new starters to highlight family friendly information, including new North West Cambridge University nursery.

(ii) Cover and support for maternity and adoption leave: during leave

Explain what support the department offers to staff during maternity and adoption leave.

- An employee who is due to go on, or is currently taking maternity leave, is entitled to access all of the usual support networks available to staff including those within their Department, Human Resources, the Occupational Health Service and Counselling Service.
- The Departments can arrange for an employee to carry out up to 10 days' work during their maternity or adoption leave without it affecting statutory maternity pay. These optional paid 'Keeping in Touch (KIT)' days help keep women up-to-date with colleagues and developments within the department and may ease the transition of returning to work. This may include training, attending meetings and committees or any activity undertaken for the purposes of keeping in touch with the workplace, however there is no obligation on either the department or the employee to make use of these days. An employee will receive full pay, inclusive of statutory maternity payment, for the hours worked during a KIT day. Alternatively, an employee may choose to take 'time off in lieu' instead of payment for hours worked.
- Faculty HR and Departmental administrators offer one-to-one maternity support for individuals.

(iii) Cover and support for maternity and adoption leave: returning to work

Explain what support the department offers to staff on return from maternity or adoption leave.
Comment on any funding provided to support returning staff.

- The University has specific policies in place to support staff returning from maternity and adoption leave to plan a flexible and smooth return to work. An employee may request to return from leave part-time or in graduated steps 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.
- The Faculty HR team and Department Administrators ensure that return to work provides flexibility to accommodate childcare needs and oversee each case to respond to individual needs before, during and after maternity leave.
- In August 2013, the University launched the Retuning Carers Fund to support the career and professional development of academic and research staff following a break for caring responsibilities. Funds of up to £10,000 can be provided and support is tailored to the individual needs and can be used for example to buy out teaching duties or support research or conference attendance. The Faculty ensures that the Scheme is promoted to all relevant staff by email twice a year.
- Three successful applications have been made and fully supported by the Heads of Department which secured funds of £29,655 for 3 staff members (2 female and one male). Where the full application amount was not awarded by the University, the Departments provided top up matching funds (£12,922).
- Access to two nurseries and a holiday play scheme are available through the University Childcare Office to help support employees with childcare responsibilities and the University operates a salary sacrifice scheme which can be used either for the University nurseries or to provide childcare vouchers for other childcare providers.
- The Faculty ensures that family-friendly policies are featured in all job advertisements.
- Staff who care for young children are given priority for limited car-parking spaces.
- All employees have a statutory right to short periods of unpaid leave in order to make arrangements to deal with family emergencies (in future supported by MFC if needed). In addition to this statutory provision Heads of Department have discretion to grant compassionate leave.
- New University nursery close to Faculty as part of NW Cambridge development (opening late 2017).

(iv) Maternity return rate

Provide data and comment on the maternity return rate in the department. Data of staff whose contracts are not renewed while on maternity leave should be included in the section along with commentary.

- Given the small number of women academics, no Academic staff have taken Maternity leave in the last 3 years, while the return rate for research staff is 75% (with only one researcher failing to return).

Table 16 Only 7 women have taken maternity leave in the Faculty in the last 5 years. One researcher left due to the end of her fixed term contract. It is hard to make any conclusions when the numbers are so small.

| | 2011 - 2016 | Maternity return rate |
|-------------------------|-------------|-----------------------|
| Academic | 0 | N/A |
| Researcher | 4 | 75% |
| Academic Related | 2 | 100% |
| Assistant | 1 | 0% |
| Total | 7 | 71% |

SILVER APPLICATIONS ONLY

Provide data and comment on the proportion of staff remaining in post six, 12 and 18 months after return from maternity leave.

- Of those that returned from maternity leave, all were still in post 18 months after returning.

(v) Paternity, shared parental, adoption, and parental leave uptake

Provide data and comment on the uptake of these types of leave by gender and grade. Comment on what the department does to promote and encourage take-up of paternity leave and shared parental leave.

- The policy of the University is to provide paternity benefits which comply with both the letter and the spirit of the law and, in most cases, are in excess of statutory requirements. Employees who apply for paternity leave and meet the University criteria will receive up to 2 weeks leave at full pay.
- During paternity leave the contract of employment continues in force and continuity of service is maintained.
- Employees who are expectant fathers or partners may take unpaid time off during working hours on up to two occasions to accompany their pregnant partner/the child's mother to antenatal appointments.

Table 17 shows that the number of staff taking paternity leave has been low in the past five years. It is difficult to capture data on the proportion of staff taking paternity leave of those eligible.

| Paternity leave 2011-2016 | 12 |
|----------------------------------|-----------|
| Academic | 2 |
| Academic related | 3 |
| Assistant | 1 |
| Researcher | 6 |

- Shared Parental Leave (SPL) is available for all eligible employees who become parents of babies due, or children placed for adoption, on or after 5 April 2015. It allows both parents the flexibility to decide how to best care for their child during its first year with their family. To date there have been no applications for shared parental leave (recent enquiry in DPMMS).
- University employees eligible to take Shared Parental Leave are entitled to 18 weeks Shared Parental Leave at full pay, minus any weeks enhanced maternity/adoption or paternity pay they have already received.

SILVER ACTIONS

16. To increase awareness and up-take of family-friendly and work life integration policies

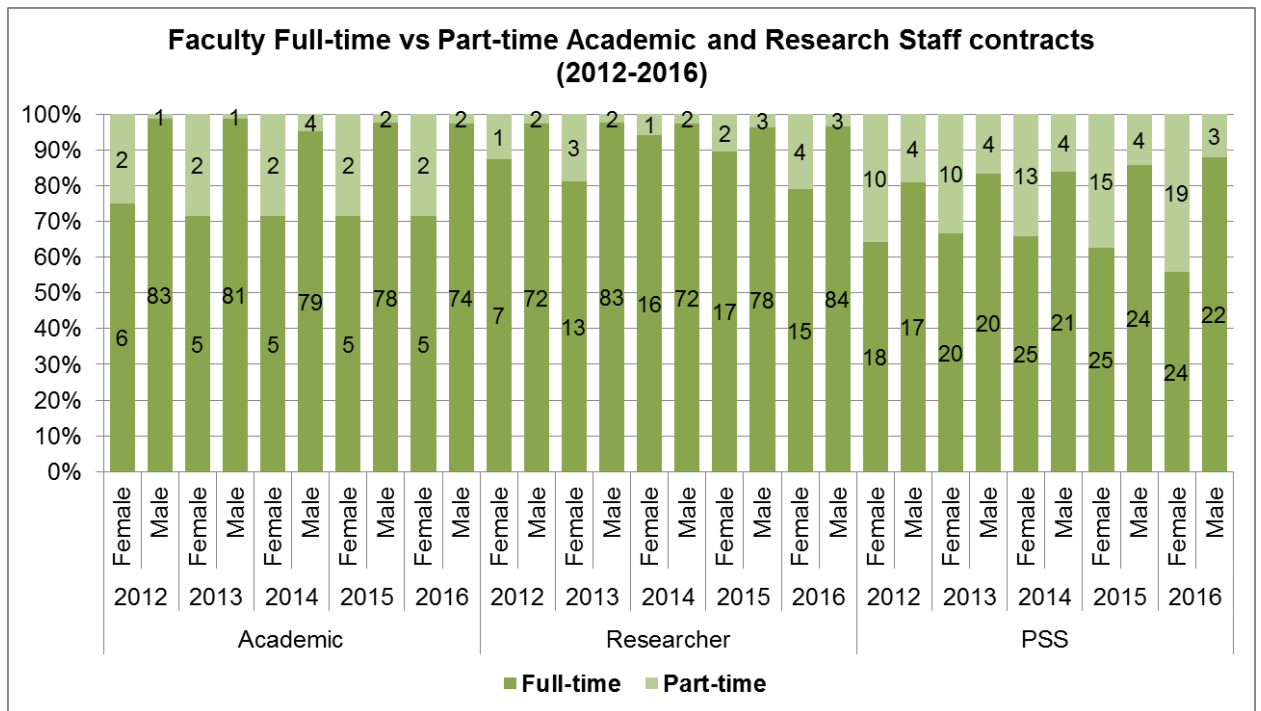
- 16.1 Promote SPACE events and host a SPACE event at CMS
- 16.2 Promote My Family Care Service and offer funds to pay for a number of days per year of the service for staff
- 16.3 Promote the Shared Parental Leave policy and enhanced shared parental pay to all relevant staff
- 16.4 Support applications to the Returning Carers Scheme
- 16.5 Ensure University wellbeing initiatives are shared across the Faculty
- 16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website
- 16.7 Develop local guidance on how to promote and support flexible working
- 16.8 Document to be provided to all new starters to highlight family friendly information

(vi) Flexible working

Provide information on the flexible working arrangements available.

- Flexible working hours are common practice within the Faculty and the University has a comprehensive Flexible Working Policy to assist staff to achieve a better work/life balance. Flexibility in working arrangements can be used to assist staff to care for dependents, cope with a disability or illness or prepare for retirement. Staff may also request to work from home where this is appropriate after security and health and safety checks have been carried out.
- ALL flexible working applications have been granted
- Academic staff often work flexibly on a more informal basis and work flexible hours to fit their teaching around personal commitments. When a new draft teaching timetable is produced it is circulated to all relevant staff who can request that their teaching takes place at certain days or times. Staff are encouraged to declare caring responsibilities in order that the Faculty can make suitable adjustments and these are taken into account when considering flexible working.
- The University 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 dependent relative, and for other unforeseen domestic situations.
- In the 2014 staff survey 94% of staff agreed they had a choice in deciding how they do their work. Of those that had applied for flexible working, none were dissatisfied with the process and the outcome.

Figure 35 illustrates that part-time working amongst support staff is increasing but remains more unusual for academic staff. There are currently four academics (50% Female) working less than full time hours (0.2-0.8FTE). Part time working is more prevalent amongst PSS.



SILVER ACTIONS

16. To increase awareness and up-take of family-friendly and work life integration policies

- 16.5 Ensure University wellbeing initiatives are shared across the Faculty
- 16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website
- 16.7 Develop local guidance on how to promote and support flexible working
- 16.8 Document to be provided to all new starters to highlight family friendly information

(vii) Transition from part-time back to full-time work after career breaks

Outline what policy and practice exists to support and enable staff who work part-time after a career break to transition back to full-time roles.

Staff returning from maternity or adoption leave can request to return to work on a graduated basis. They will be supported locally to increase their hours over the following 12 months, e.g. rising to 50 per cent or more within 6 months and be back to full-time within 12 months following their initial date of return.

5.6. Organisation and culture

(i) Culture

Demonstrate how the department actively considers gender equality and inclusivity. Provide details of how the Athena SWAN Charter principles have been, and will continue to be, embedded into the culture and workings of the department.

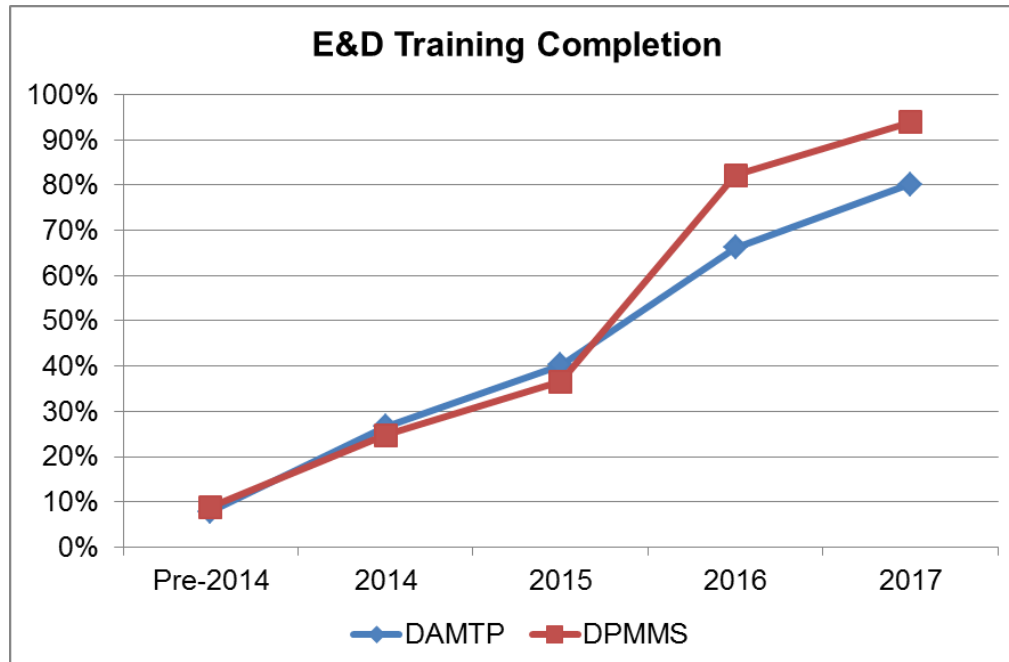
E&D training completion

- The Faculty strives to promote a positive working environment and there has been a push, led by the Heads of Departments, on Equality and Diversity training for all staff (Table 18, Figure 36).
- E&D issues, including unconscious bias, are now routinely highlighted at all induction meetings for students in all years, and at supervisor training workshops
- 76 attendees (51% female) at unconscious bias training event hosted in Faculty in 2016

Table 18 shows a high completion rate for all members of staff.

| Staff Group | DPMMS | | DAMTP | |
|------------------|-----------|--------------|------------|--------------|
| | # Staff | % Completion | # Staff | % Completion |
| Academic | 39 | 97% | 48 | 96% |
| Research | 38 | 87% | 54 | 60% |
| Academic Related | 11 | 100% | 27 | 82% |
| Assistant | 9 | 100% | 38 | 90% |
| Total | 97 | 94% | 167 | 78% |

Figure 36 illustrates the increase in E&D training completion from 26% to 87% in the last 3 years



- The Faculty undergraduate admissions webpages⁵ have been completely overhauled, and now include photos of a diverse collection of students and staff, and have a link to the Faculty 'Women in Maths' pages⁶, developed since our last submission.

⁵ <https://www.maths.cam.ac.uk/undergraduate-admissions>

⁶ <https://www.maths.cam.ac.uk/women-maths-1>

- The Emmy Nöether Society now holds an annual garden party on the CMS site, which is very well attended by students and staff at all levels, and includes a talk by a female mathematicians.



Figure 37: Dr Carola-Bibiane Schönlieb leads a discussion at the 2016 ENS garden party.

SILVER ACTIONS

17. To promote equality and diversity across the Faculty

17.1 Develop official guidance on ensuring a balanced and diverse range of speakers including core hours best practice recommendations

17.2 Ensure balanced and diverse presence of photos and news about achievements and research throughout the Faculty website.

17.3 Improve planning and publicity of termly lunches for female mathematicians; consider increasing the frequency of this regular event and/or including other types of regular events (e.g. Speed Mentoring)

17.4 Continue promoting the activities of the Emmy Nöether Society, but also engage further to publicise events and opportunities aimed at female students and researchers.

17.5 Ensure that all newcomers to the Faculty (students and staff) are aware of the availability of E&D contacts and of Women Advisers

17.6 Link to national and international E&D celebrations and anniversaries and ensure that a feature appears on the Faculty website

Staff and student survey results

- We have run two student surveys (Easter 2014 and Easter 2016) to evaluate students' perceptions of gender issues in mathematics, with a 37% response rate in 2016 (41% in 2014). We have used the results in 2016 to compare with the baseline of 2014, and we noted the main themes. We observed the following general points:
 - Most answers showed a consensus between male and female views.
 - Free-field text responses in 2014 from several males indicated that they could see no problem; in 2016, we noticed a reduction in such comments and instead more understanding from males about the difficulties that female undergraduates might experience.
 - Students (both male and female) consistently report on the small number of female lecturers and supervisors which will be addressed with at least 4 new female lecturers starting in 2016 and 2017
 - The student survey shows that awareness of the Faculty's policies on unacceptable language or behaviour has increased: male from 34% to 44%, and female from 26% to 53%.
 - Comments by male students in the new student survey shows that many are increasingly aware of the adverse effect that the gender imbalance at all levels may have on some female students.

There aren't enough female lecturers...it is very difficult for women to feel at home in such a male dominated world
Male student, 2016 survey

The main issue is not happening in the Faculty, but beforehand: Too few women choose to study mathematics and hence women are under-represented in the Faculty. Cambridge should change that.
Male student, 2016 survey

- Unlike the previous student survey, the new one lacks any flippant comments about the survey or about possible bias favouring female students (though some female students, as expected, are worried that the AS process and related initiatives may give rise to a perception of positive action/bias)
 - Students were asked if they had experienced a situation where they felt uncomfortable due to their gender. In 2016, 43% of females agreed with this statement. Although that percentage from 2016 is too high, it is slightly lower than reported in 2014 (51%).
 - Students used the 2016 survey to highlight some practical difficulties (e.g. bathroom provision) that have since been addressed.
 - Several students commented in 2016 that one lecturer was using inappropriate language. This matter was taken very seriously and the course lecturer, who is not a member of staff, was given a written warning by the Head of Department.
- Staff were surveyed in 2014 using a standard questionnaire that was used elsewhere in the University. 56% of DPMMS and DAMTP (n=161) responses were collected, and compared against the other departments in the School. In general, our responses were much more positive than for the other departments. Three main challenges were highlighted by the survey:
 - Induction/appraisal/probation procedures need improving. We have since introduced staff review and development procedures for postdocs. Induction packs are now provided to all staff and probation/induction material is currently being reviewed.
 - Many academic and research staff commented that they struggled with "work-life balance"; this was a common theme among many departments. The University has started a wellbeing group to help promote strategies for improving the wellbeing of all its staff. One short-term action is that DAMTP will be trialling some new "Leadership" workshops aimed at discussing these issues with PIs.

- Childcare support was noted as a key problem, which again has been raised centrally in the University. Initiatives such as SPACE and My Family Care will be actively promoted.

SILVER ACTIONS

16. To increase awareness and up-take of family-friendly and work life integration policies

- 16.1 Promote SPACE events and host a SPACE event at CMS
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- 16.6 Ensure University wellbeing initiatives are shared across the Faculty
- 16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website
- 16.7 Develop local guidance on how to promote and support flexible working
- 16.8 Document to be provided to all new starters to highlight family friendly information

17. To promote equality and diversity across the Faculty

- 17.5 Ensure that all newcomers to the Faculty (students and staff) are aware of the availability of E&D contacts and of Women Advisers

18. To improve communication across Departments and the Faculty

- 18.1 Update induction pack for Faculty and support development of School of Physical Sciences Induction Pack

15. To collect feedback from all staff groups

- 15.1 Faculty staff survey run in 2018 to seek feedback on key areas.

5. To collect and review Student feedback

- 5.1 Repeat Faculty Athena SWAN student survey

(ii) HR policies

Describe how the department monitors the consistency in application of HR policies for equality, dignity at work, bullying, harassment, grievance and disciplinary processes. Describe actions taken to address any identified differences between policy and practice. Comment on how the department ensures staff with management responsibilities are kept informed and updated on HR policies.

- Since the introduction of an adequately resourced and shared HR team across the Faculty in 2013 there has been a single point of contact for all HR enquiries. This has allowed a small core team of administrators to be trained with the latest knowledge. All recruitments come through this team so the rules are applied consistently, with the team offering appropriate challenge to poor practice.

- Where necessary, the HR team escalate issues to the relevant Departmental Administrator, especially in relation to casework, who then tackle the issue directly. Although casework is a relatively rare occurrence within the Faculty, there is evidence from both Departments how issues have been addressed robustly when they have surfaced.
- The two new Departmental Administrators (appointed in 2015 and 2016) utilise the full range of HR tools available from informal tools such as discussions and reminders about appropriate behaviour, recommending training, and mediation to the more formal processes of Dignity @ Work and the grievance policy instigating an investigation. It is the belief that if issues are effectively tackled then this helps to promote confidence in the HR processes to support staff.
- Over the past two years both Departments have had a focus on good HR practice as part of the shared service. The Faculty underwent a staff survey in 2014, the results of which were very positive and showed that 79% of respondents felt valued by the Department and enjoyed working in the Departments.
- The staff survey in 2014 highlighted that 90% of respondents agreed they were treated with fairness and respect in the Department (with a further 6% neither agreeing or disagreeing). Nevertheless, the Dignity at Work policy is actively highlighted with reminders being publicised in the DAMTP staff newsletter, posters distributed around the site, the Administration staff meeting and also putting on drop in sessions in Easter term 2016.
- The main routes for publicising changes in policies are firstly from the University HR team to the Departments through the HR bulletin and a School based HR forum, then in to the Departments through academic staff meetings, the Departmental strategy groups, administrative staff meetings, posters and the staff newsletter.
- There are two Faculty E&D contacts (one man and one woman), available for all staff and students. There are also three women's advisors publicised at induction and on the Faculty website.



Dr Carola Schönlieb



Dr Helen Mason



Dr Perla Sousi

SILVER ACTIONS

17. To promote equality and diversity across the Faculty

- 17.1 Ensure that all newcomers to the Faculty (students and staff) are aware of the availability of E&D contacts and of Women Advisers

(iii) Representation of men and women on committees

Provide data for all department committees broken down by gender and staff type. Identify the most influential committees. Explain how potential committee members are identified and comment on any consideration given to gender equality in the selection of representatives and what the department is doing to address any gender imbalances. Comment on how the issue of 'committee overload' is addressed where there are small numbers of women or men.

Tables 19 illustrates the gender and staff balance for current memberships of all Faculty committees 2014 - 2017. Each of the committees listed plays a key role in the Faculty. The proportion of female members of Faculty Board has increased from 33 to 45% in last three years.

| Committee Name | Academic | Student | Support staff | Male | Female | % Female | Academic | Student | Support staff | Male | Female | % Female | Academic | Student | Support staff | Male | Female | % Female |
|--|----------|---------|---------------|------|--------|----------|----------|---------|---------------|------|--------|----------|----------|---------|---------------|------|--------|----------|
| | 2014/15 | | | | | | 2015/16 | | | | | | 2016/17 | | | | | |
| Committees focussing on Faculty/Staff matters | | | | | | | | | | | | | | | | | | |
| Faculty Board | 18 | 3 | 1 | 15 | 7 | 32 | 17 | 3 | 1 | 16 | 5 | 24 | 18 | 3 | 1 | 17 | 5 | 23 |
| Appointments | 6 | 0 | 0 | 3 | 3 | 50 | 6 | 0 | 0 | 3 | 3 | 50 | 6 | 0 | 0 | 3 | 3 | 50 |
| Promotions | 11 | 0 | 0 | 9 | 2 | 18 | 11 | 0 | 0 | 9 | 2 | 18 | 10 | 0 | 0 | 8 | 2 | 20 |
| Safety | 3 | 0 | 9 | 7 | 5 | 42 | 3 | 0 | 9 | 8 | 4 | 33 | 3 | 0 | 8 | 7 | 4 | 57 |
| Committees focussing on postgraduate student matters | | | | | | | | | | | | | | | | | | |
| Degree | 8 | 0 | 1 | 8 | 1 | 11 | 10 | 0 | 1 | 10 | 1 | 9 | 10 | 0 | 2 | 10 | 2 | 17 |
| Part III | 8 | 2 | 0 | 6 | 4 | 40 | 8 | 2 | 0 | 9 | 1 | 10 | 8 | 2 | 0 | 8 | 2 | 20 |
| Committees focussing on undergraduate student matters | | | | | | | | | | | | | | | | | | |
| Admissions | 7 | 2 | 0 | 6 | 3 | 33 | 9 | 2 | 0 | 7 | 4 | 36 | 9 | 2 | 0 | 6 | 5 | 45 |
| Teaching | 8 | 2 | 0 | 9 | 1 | 10 | 8 | 2 | 0 | 8 | 2 | 20 | 8 | 2 | 0 | 8 | 2 | 20 |
| Curriculum | 6 | 2 | 0 | 6 | 2 | 25 | 6 | 2 | 0 | 7 | 1 | 13 | 5 | 2 | 0 | 7 | 0 | 0 |
| Consultative (NST) | 6 | 3 | 0 | 7 | 2 | 22 | 6 | 3 | 0 | 7 | 2 | 22 | 6 | 3 | 0 | 8 | 1 | 11 |
| Syllabus (NST) | 7 | 0 | 0 | 6 | 1 | 14 | 7 | 0 | 0 | 6 | 1 | 14 | 7 | 0 | 0 | 6 | 1 | 14 |
| Teaching (NST) | 4 | 0 | 0 | 3 | 1 | 25 | 4 | 0 | 0 | 3 | 1 | 25 | 4 | 0 | 0 | 3 | 1 | 25 |

- The Faculty Board is the most influential committee and it is constituted according to regulations laid down in the Statutes and Ordinances of the University. Members include the Heads of the Departments, members elected by the Professors in the Faculty, members appointed by the University Council, members elected by the Faculty at its annual meeting, co-opted members and three student members (two undergraduates and one graduate) who are elected, one year at a time, by the student body. The Board meets six times a year.
- Committee representation tends to be based on roles and potential contribution rather than gender. The proportion of women on Faculty committees is higher than the small proportion of women academic staff (12%). The Faculty is aiming to reduce the burden on the limited number of female academics, with co-opted members as well as via new female academic staff.
- Often 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 female representation on all but one of the committees.
- University committees generally enforce a gender representation policy of at least one, and preferably two female members.

SILVER ACTIONS

19. To monitor workload for all academic staff

19.2 Consider committee representation by gender and additional responsibilities/core hours recommendations as part of annual workload review

19.3 To increase representation without overburdening the small number of academic women, College Teaching Officers and Research Fellows will be encouraged to put themselves forward for committee membership

(iv) Workload model

Describe any workload allocation model in place and what it includes. Comment on ways in which the model is monitored for gender bias and whether it is taken into account at appraisal/development review and in promotion criteria. Comment on the rotation of responsibilities and if staff consider the model to be transparent and fair.

- Currently Heads of Departments (HoDs) allocate non-research workloads based on their knowledge of individuals, considering the overall departmental needs as well as individuals' strengths and circumstances.
- DAMTP already collate teaching and committee responsibilities by person in a database alongside a points-based model for assigning examining duties only.
- In DPMMS there is an annual collation and publication of teaching and committee/administration workloads shared and discussed in staff meetings.
- While this works reasonably well, it is not always transparent and maintaining an accurate overall picture ensuring all commitments are recorded could become increasingly difficult given the sizes of both Departments and the increasing diversification of academic roles.
- An annual survey of workloads, collating information to assist HoDs allocate responsibilities and encourage, rather than mandate, a collegial approach, particularly regarding administration has been developed.
- The process was considered and approved by Academic staff at the respective Departmental staff meetings in October 2016.
- Following the survey (which will be used to fill in any gaps missing from data already held and reviewed in the Departments, a summary of the distribution of duties will be communicated to all Academics in the respective Departments.
- Administrative oversight is via the senior administrators in each Department with commitments from academic staff to fill in the survey. The HoDs will consider the collated information and use it to inform decisions for distribution of teaching and administrative tasks for Academic members of staff.

SILVER ACTIONS

19. To monitor workload for all academic staff

19.1 Work with IT team to develop an online system for populating workload database and ensure workload is transparent between all academics and takes account of all committee membership including Athena SWAN and external committees

19.2 Consider committee representation by gender and additional responsibilities/core hours recommendations as part of annual workload review

19.3 To increase representation without overburdening the small number of academic women, College Teaching Officers and Research Fellows will be encouraged to put themselves forward for committee membership

19.4 Consideration of core hours and additional responsibilities when allocating duties

(v) Timing of departmental meetings and social gatherings

Describe the consideration given to those with caring responsibilities and part-time staff around the timing of departmental meetings and social gatherings.

- The scheduling of departmental administrative meetings is as accommodating as possible to staff with caring responsibilities and/ or part-time hours. Careful thought is given to the start and finish times to allow staff with caring responsibilities to fully engage in the meetings. All key committee and staff meetings are held within core hours.
- Where staff work part-time, wherever possible meetings are scheduled during their normal working hours. Where it is not possible, meeting times are scheduled at the start of each academic year so that advance planning is possible. Staff are actively encouraged to discuss their work life balance with their Line Managers so that these types of consideration can be taken into account.
- Social activities are often scheduled within core hours such as during lunchtimes or timed to take place where there has been consultation on the timing e.g. happy hour which is an informal social gathering for all staff and students held at 5pm on Fridays.
- The Departments hold summer parties to which families are invited. Children are welcomed with presents at the annual Christmas Party (3 course meal and disco), which is paid for by the Faculty.

(vi) Visibility of role models

Describe how the institution builds gender equality into organisation of events. Comment on the gender balance of speakers and chairpersons in seminars, workshops and other relevant activities. Comment on publicity materials, including the department's website and images used.

Table 20 illustrates the gender breakdown of seminar speakers between October 2015 and April 2017 to ensure appropriate role models for our PhDs and ECRs. This has been closely monitored and figures reported at termly staff meetings with reminders about the importance of a diversity of speakers. The proportion of female speakers is higher than the proportions of female Academic and research staff in the Faculty.

| | Male | Female | % F |
|--------------|------|--------|-----|
| DAMTP | 424 | 117 | 28% |
| DPMMS | 340 | 56 | 16% |
| Total | 764 | 173 | 23% |

- The Student Survey showed that perception by male students remained similar in 2016 to results in 2014, with around 40% saying that the Faculty promotes both men and women as visible role models, but perception by female students has improved considerably, from 19% to 33%.
- More photos of female academic staff and students have been especially commissioned and now appear on the Faculty website, as well as on the changing screens throughout the building, listing seminars and events interspersed with photos.
- High profile launch of the Cantab Capital Institute for the Mathematics of Information featuring the Director of the Institute, Dr Carola Schönlieb.
- Monthly departmental bulletins in DAMTP, regularly publicise events aimed at female mathematicians, and publicise achievements by female mathematicians, e.g. Julia Gog appointed as the 2016 Forder Lecturer by the LMS, Carola Schönlieb awarded a Whitehead Prize by the LMS, Helen Mason awarded an STFC Public Engagement Fellowship, for a new project to inspire school-age students to engage with science activities.

Figure 38 The Corfield Lecturer, Holly Krieger's NumberPhile YouTube videos have had almost 2.5 million views in total)⁷.



- New 'Women in Maths' pages⁸ have been developed and have been reviewed a number of times. They include a resource page, as well as a new 'People' page⁹ which lists (with photos) all female mathematicians in the Faculty.
- New 'Profiles' pages¹⁰ have been added, highlighting individual staff and students who wished to contribute.

Figure 39 In April 2017 the Faculty ran two women in Mathematics events; Sylvie Paycha from the University of Potsdam, speaking on *A place of one's own in mathematics* as well as hosting the 'Women of Mathematics throughout Europe' portrait exhibition (<http://womeninmath.net>) with a launch event and panel discussion on Issues affecting women in mathematics open to the public.



⁷ <https://www.dpmms.cam.ac.uk/~hk439/media.html>

⁸ <https://www.maths.cam.ac.uk/women-maths-1>

⁹ <https://www.maths.cam.ac.uk/womeninmaths/people.html>

¹⁰ <https://www.maths.cam.ac.uk/womeninmaths/profiles.html>

Figure 40 Plus magazine this month featured six women from the Faculty who are now part of the Women of Mathematics throughout Europe' portrait exhibition including video interviews. <https://plus.maths.org/content/women>.

The screenshot shows the Plus magazine website with a navigation bar and several profile articles. The articles featured are:

- Women of mathematics: Nilanjana Datta** (Submitted by m344 on April 12, 2017). Profile text: "Nilanjana Datta is a lecturer in quantum information theory at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, and a fellow of Pembroke College." Includes a photo of her in front of a chalkboard.
- Women of mathematics: Natalia Berloff** (Submitted by m344 on April 12, 2017). Profile text: "Natalia Berloff is a Professor of Applied Mathematics at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge, and a Fellow of Jesus College." Includes a photo of her.
- Women of mathematics: Anne-Christine Davis** (Submitted by m344 on April 12, 2017). Profile text: "Anne-Christine Davis is Professor of Mathematical Physics (1967) at the Department of Applied Mathematics and Theoretical Physics, University of Cambridge." Includes a photo of her.

Figure 41: Just some of the images from the Faculty website highlighting the role of women both in the history of Maths at Cambridge but also in the Faculty today.

The content highlights the role of women in the history and current of Mathematics at Cambridge, featuring the London Mathematical Society Good Practice Scheme logo and several profiles:

- Philippa Fawcett (1868-1948)**: Mathematician and educationalist who conducted research in fluid dynamics. In 1890 she became the first woman to obtain the highest score in the Mathematical Tripos exams. She was the daughter of suffragist Millicent Fawcett.
- Frances Kirwan (1959-)**: Her work in algebraic and symplectic geometry has earned her the Senior Whitehead Prize, and has advanced the understanding of the structure of geometric objects by investigating their algebraic and topological properties. She was the second youngest President of the London Mathematical Society.
- Mary Cartwright (1900-1998)**: First female mathematician to be elected to the Royal Society. With J.E. Littlewood she was the first to analyse a dynamical system with chaos.
- Dr J. Goedecke**: College Teaching Officer. Research interests: Categorical Algebra, including non-abelian homological algebra.
- Dr S. Höhn**: Research Associate. Research interests: Biological and biophysical aspects of development and embryonic cell sheet curling.
- Dr M. Iacobelli**: Research Associate. Research interests: Analysis of PDEs in kinetic theory, and quantisation of measures.
- Dr A. Kim**: Research Assistant. Research interests: Minimax lower bounds, shape-constrained estimation, and extreme value theory.
- Dr P. Klepac**: Visitor. Research interests: Optimal control and game theory applied to control of infectious diseases.
- Dr J.R. Gog**: Reader in Mathematical Biology. Research interests: Mathematics of infectious diseases, particularly models of influenza strain dynamics.
- Dr A. Honerkamp-Smith**: Research Fellow. Research interests: Interactions between fluid flow, lipid membranes and membrane proteins.
- Dr A. Keating**: Lecturer (On Leave). Research interests: Symplectic topology.
- Dr A. Kisil**: College Teaching Officer. Research interests: PDEs and the Wiener-Hopf method.
- Dr H. Krieger**: Lecturer. Research interests: Arithmetic and algebraic aspects of complex dynamical systems.

SILVER ACTIONS

17. To promote equality and diversity across the Faculty

17.1 Develop official guidance on ensuring a balanced and diverse range of speakers including core hours best practice recommendations

17.2 Ensure balanced and diverse presence of photos and news about achievements and research throughout the Faculty website.

17.3 Improve planning and publicity of termly lunches for female mathematicians; consider increasing the frequency of this regular event and/or including other types of regular events (e.g. Speed Mentoring)

17.4 Continue promoting the activities of the Emmy Nöether Society, but also engage further to publicise events and opportunities aimed at female students and researchers.

17.5 Ensure that all newcomers to the Faculty (students and staff) are aware of the availability of E&D contacts and of Women Advisers

17.6 Link to national and international E&D celebrations and anniversaries and ensure that a feature appears on the Faculty website

(vii) Outreach activities

Provide data on the staff and students from the department involved in outreach and engagement activities by gender and grade. How is staff and student contribution to outreach and engagement activities formally recognised? Comment on the participant uptake of these activities by gender.

- The Mathematics Faculty is the home of the largest departmental outreach programme in the University. We work with school students, teachers, families and the general public through a range of innovative education activities and events:
 - Millennium Mathematics Project (MMP) is a pioneering collaboration with the Faculty of Education. The MMP consists of a family of award-winning outreach and education activities, including the very successful NRICH and Plus websites, and face-to-face work with students, teachers and the general public.
 - NRICH resources focus on problem-solving and take a low-threshold high-ceiling approach, building students' confidence, mathematical reasoning, and creative thinking skills and the website provides thousands of free online resources designed to challenge, inspire and engage ages 3 to 19.
 - Coordination of the STIMULUS programme, which creates teaching assistant placements in local primary and secondary schools for Cambridge student volunteers to help with mathematics, science and computing.
 - Underground Mathematics, a project funded by the Department for Education, aims to make advanced post-16 mathematics a rich, coherent and stimulating experience. The Underground Mathematics website provides innovative teaching resources for use in the classroom. They are designed to help students connect ideas and develop techniques so as to secure their own mathematical understanding.

Table 21 MMP activities over the last three years

| | 2013-14 | 2014-15 | 2015-16 |
|------------------------------------|----------------|----------------|----------------|
| Site visits | 7.9 million | 9.7 million | 11.5 million |
| Page views | 32.6 million | 38 million | 42.1 million |
| School student visits | 26,000 | 14,500 | 15,000 |
| Teacher visits | 4,000 | 3,000 | 4,000 |
| Public visits | 1,500 | 1,600 | 1,000 |
| Stimulus Student Placements | 291 | 361 | 200 |

Outreach activities and impact

- Since 2014-15, inclusion of female speakers from Cambridge at the Maths sessions of the Oxbridge Conferences
- Since 2014-15: new posters for Maths Open days portray the Faculty as a diverse community, new poster also produced and displayed in collaboration with the ENS, showing female mathematicians in the Faculty and their research; stall by ENS becomes a permanent feature of our Open Days; videos about female mathematicians become a permanent feature of our Open Days.
- Newly appointed Faculty Admissions Officer is female.
- Since 2015-16: new, revised presentation at Oxbridge Conferences highlighting historical contribution to Maths research by a female mathematician - previously the maths research topics chosen for presentation only highlighted contribution by male mathematicians.
- Since 2015-16: new literature and handouts for Open Days includes case studies of both female and male students, and highlights a range of potential careers for mathematicians which have a wide appeal. All handouts are available online, as well as in hard copy at Open Days.
- A new 'History of Mathematics at Cambridge' leaflet¹¹ has been produced, taking care to reflect diversity available online as well as in hard copy at Open Days
- Y12 Girls outreach event in 2016, to become a recurring event.
- More College events aimed at potential female maths applicants and younger (from Y11) have been developed by Colleges and have had wider Faculty involvement
- Sutton Trust Summer School programme has included more female speakers for outreach research talks.

Figure 40 Y12/LMS Girls In Mathematics events hosted by the Faculty in April 2016&17

Students engaged in problem-solving workshops during the 'Step Up!' Y12 girls' event on 18 April 2016.



¹¹ <https://www.maths.cam.ac.uk/system/files/his>

SILVER ACTIONS

1. To encourage more students, particularly girls, to study maths and further maths at A level

- 1.1 New initiatives aimed at younger female students Y11 and Y12, with closer collaboration between Faculty and Colleges in outreach activities. Support more talks to 11-16 year olds promoting women mathematicians
- 1.2 Promote MMP, NRICH and Underground Maths initiatives and resources
- 1.3 Sheila Edmonds Lecturer in Mathematics appointment (Newnham/DAMTP)
- 1.4 Programme of activities for women coordinated by Corfield/ Sheila Edmonds Lecturers
- 1.5 Faculty to host a "Women of Mathematics" exhibition, developed by European Women in Mathematics
- 1.6 Outreach videos online so that a larger number of applicants get a chance to view them

2. To increase numbers of undergraduate applications from women

- 2.6 Outreach videos online so that a larger number of applicants get a chance to view them

SILVER APPLICATIONS ONLY

6. CASE STUDIES: IMPACT ON INDIVIDUALS

Recommended word count: Silver 1000 words

Two individuals working in the department should describe how the department's activities have benefitted them.

The subject of one of these case studies should be a member of the self-assessment team.

The second case study should be related to someone else in the department. More information on case studies is available in the awards handbook.

DR STEPHEN EGLEN

420 words

I joined DAMTP as a temporary lecturer in 2004, and was subsequently appointed to a tenured Lecturership in 2006. My partner [Dr Dina Kronhaus] is a Wellcome Trust Fellow, and we have three children, born 2008, 2009 and 2012.



For our first birth, I was unaware of formally taking paternity leave, but my senior colleagues were already supportive to the extent of allowing me to reschedule my lecturing load. For our next two children, the Department Administrator was proactive in ensuring I took paternity leave. My partner had health complications during each pregnancy, and the Department was always very supportive in ensuring my family needs were met.

During 2008-2012 my time available for research was limited. This was recognised both in reducing my "required outputs" for the 2012 REF, and for my application to promotion. Both the Department and University were supportive of my situation, and I was promoted to Reader in 2015.

Most recently, in 2016, Prof Davis alerted me to a University fund for helping returning carers re-establish their research, and encouraged me to apply. I applied for funding, but due to severe competition the University offered only half the funds I requested. This was disappointing, but before I'd even had chance to discuss this with anyone, the Head of Department promptly provided matching funding.

I feel fortunate to work in a Faculty that is so supportive of my family needs. For example, I usually leave the Department at 3pm to collect children from school. Colleagues are very supportive of this, and have never objected to when I ask for meetings to be scheduled to finish before 3pm. Likewise, my lecturing duties (mostly at the graduate level) are flexibly scheduled not to clash with the daily school-run.

I have been involved with Athena SWAN activities in our Faculty for about three years. In just a few years, I feel that there is now widespread recognition in the Faculty that our activities are important to improve the working environment for everyone. (I could not say the same three years ago when I joined the panel.) I am one of two Equality and Diversity contacts in the Department, and I think our messages at student induction events are having a positive effect. I have taken on several roles in the University relating to promoting Equality and Diversity. My impression is that our Department is certainly one of the most progressive in creating and promoting an inclusive workplace. I feel fortunate to be working in a Faculty that is so supportive.



My research career in the Department of Applied Mathematics and Theoretical Physics began in 2010 when I started a 1.5 year PDRA position, fresh out of a PhD in the USA. Nine months after the start of my postdoc, my first son was born. During my maternity leave I wrote and submitted an application for an independent 3-year NERC postdoctoral fellowship, and returned to work after 4 months leave. As I returned to work relatively soon, and I was still nursing my son, the Department very kindly provided a small private fridge in my office to store expressed milk, which was tremendously helpful. When I found out that I received an interview invitation, several senior academics in the department organised a mock panel interview for me, which led to a successful interview and award.

My second son was born in early 2013, but the pregnancy was complicated and I was not able to do my laboratory experiments anymore. The Department supported a successful application to the pilot Returning Carers Scheme. This provided 4-months research assistant (RA) support, which was extremely helpful in continuing with the scheduled lab and fieldwork. Leading up to my maternity leave, I wrote an application for a 5-year Royal Society Dorothy Hodgkin Research Fellowship and with a 1-month old baby (and husband) I went to London for the interview, where I was successful. I submitted another Returning Carers Scheme application for a 4-month research assistant to finish some work that I had to interrupt due to pregnancy complications, but this time my proposal was only funded at roughly 50%. The Department supplemented this grant (by £7,000) to the full amount I applied for, and therefore I was able to hire a good RA for the full four months, resulting in the work being published in a leading journal at the end of his post.

Recently, I have been encouraged by an academic in the Department to apply for the L'Oreal UNESCO for Women in Science fellowship: I was shortlisted to one of 8 candidates from ~600 applications and the Department organised a high-powered multidisciplinary mock panel to help me prepare. Unfortunately, I did not receive the fellowship after interview, but the mock panel definitely helped me to tune my presentation to the right audience.

As a Dorothy Hodgkin Research Fellow I now lead a research group in granular flows with 4 MSc students, 3 PhD-students and one postdoc, with an additional postdoc and 2 PhD students joining me later this year. I am the only women PI in this pavilion, and sometimes that can be isolating, but I now try to give back some of the mentoring and career-advice I have received over the past few years. I have coached about 6 women across the Department and in the University in their Dorothy Hodgkin applications and several of them told me in person that my encouragement and support was essential in their success in getting the Fellowship.

7. FURTHER INFORMATION

Recommended word count: Bronze: 500 words | Silver: 500 words

Please comment here on any other elements that are relevant to the application.

8. ACTION PLAN

The action plan should present prioritised actions to address the issues identified in this application.

Please present the action plan in the form of a table. For each action define an appropriate success/outcome measure, identify the person/position(s) responsible for the action, and timescales for completion.

The plan should cover current initiatives and your aspirations for the next four years. Actions, and their measures of success, should be Specific, Measurable, Achievable, Relevant and Time-bound (SMART).

See the awards handbook for an example template for an action plan.

Please note the Priority column in the Action Plan relates to timeframe over the 4 years of the action plan not the importance of the actions.



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Faculty of Mathematics Silver Action Plan

UNDERGRADUATE STUDENTS

| | |
|---|---|
| Objective | 1. To encourage more students, particularly girls, to study maths and further maths at A level |
| Rationale | <ul style="list-style-type: none"> Only 28% of those taking maths and further maths at A level are female. Need to encourage more girls to continue with these subjects at school. |
| Priority | <ul style="list-style-type: none"> High |
| Actions to date | <ul style="list-style-type: none"> Cambridge runs a number of high-profile projects to support mathematics teaching and learning in schools, including various activities run by the Millennium Mathematics Project, the NRIC website publishing resources supporting mathematics education for ages 3-18 and the Underground Mathematics website publishing resources to support A-level mathematics teaching. Corfield lecturer appointed in 2016 with a specific remit to lead outreach initiatives for women in mathematics. Similar Sheila Edmonds Lecturer in Mathematics post between Newnham and DAMTP advertised in March 2017 |
| Impact | <p>Over the last 3 years:</p> <ul style="list-style-type: none"> 113 million page views on MMP, NRIC and Underground Maths outreach webpages Worked face-to-face with over 55,500 school students through both visits to schools and events held in Cambridge 11,000 teachers participated in our face-to-face professional development events 4,100 visitor interactions with members of the public during family maths events 852 Stimulus teaching assistant placements in local primary and secondary schools for Cambridge student volunteers School resources and events feature an equal gender balance among interviewees, speakers and contributors Starting April 2016, the Faculty run a girls-only event for Y12 students. In 2017 this was amalgamated with the LMS Girls in Mathematics Day. In April 2016, 104 Y12 girls attended as well as 20 A-level teachers. In April 2017 we are currently expecting 139 Y12 girls to attend and 30 teachers. All speakers and workshop leaders are female. |
| New actions | <p>1.1 New initiatives aimed at younger female students Y11 and Y12, with closer collaboration between Faculty and Colleges in outreach activities. Support more talks to 11-16 year olds promoting women mathematicians</p> <p>1.2 Promote MMP, NRIC and Underground Maths initiatives and resources</p> <p>1.3 Sheila Edmonds Lecturer in Mathematics appointment (Newnham/DAMTP)</p> <p>1.4 Programme of activities for women coordinated by Corfield/ Sheila Edmonds Lecturers</p> <p>1.5 Faculty to host a "Women of Mathematics" exhibition, developed by European Women in Mathematics</p> |
| Responsibility | <p>1.1 Faculty Admissions Officer</p> <p>1.2 MMP Deputy Director</p> <p>1.3 Corfield Lecturer</p> <p>1.4 Sheila Edmonds Lecturer</p> <p>1.5 Faculty Admissions Officer</p> |
| Specific Measurables and Timelines | <p>1.1 Six new initiatives delivered in next 4 years, aiming for at least 100 participants per year</p> <p>1.2 Increased web traffic for outreach websites (>42 million page views per annum)</p> |

Faculty of Mathematics Silver Action Plan

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| | <p>1.3 Appointment completed by summer 2017</p> <p>1.4 At least four activities per annum with 200 attendees per year</p> <p>1.5 Women of Mathematics exhibition hosted by the Department in the long term and actively used during open days from 2017 (>500 attendees over next 2 years)</p> |
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| Objective | 2. To increase numbers of undergraduate applications from women |
| Rationale | <ul style="list-style-type: none"> • Current proportion of female applicants to undergraduate degree is 26% which is lower than competitors and national average, but only just below proportion of female students achieving A* in Maths and Further Maths A levels (28%). • Lack of clarity of practice in offers (a high hurdle that is then lowered post-exam for about one third of the cohort) may disproportionately deter students from groups that we are keen to attract such as key socio-economic groups, women and state school students |
| Priority | <ul style="list-style-type: none"> • High |
| Actions to date | <ul style="list-style-type: none"> • Newly appointed Faculty Admissions Officer is female • New website front page with images of female mathematicians, a prominent AS logo and link to new 'Women in Maths' webpages. • New admissions webpages implemented with content completely revised. The Faculty has funded extra computer officer time and hired a professional photographer for producing a bank of new photos with the explicit brief of representing diversity. • Enhanced data collection implemented, systematically monitoring applications, offers and acceptances, as well as performance in relevant pre-University exams by gender and circulated to relevant Departmental and Faculty committees. • A new Mathematics Undergraduate Admissions Committee (MUAC) with members appointed by both Colleges and Faculty, as a means of liaising more closely with Colleges on admissions. • A Working Group with representatives from the AS panel, the Teaching Committee and MUAC has gathered full data (gender, contextual information about applicants, A-level and STEP grades, Tripos grades etc) for ten cohorts, and has started a full statistical analysis of the data, with the aim of recommending evidence-based innovative practice for increasing female mathematicians at Cambridge. • Mathematics 'Masterclasses' now always include female speakers |
| Impact | <ul style="list-style-type: none"> • Increase of >10% of weekly hits on admissions website from the 2016/17 weekly average of 21,000 • Increase in female undergraduate applicants per annum from 23% in 2012 to 26% in 2016 • Increase in female undergraduates admissions per annum from 38 (15.4%) in 2012 to 45 (17.5%) in 2016 • Several committees besides AS have started discussing gender data and trying to understand any trends and finding ways of reducing the gender imbalance in admissions. • The new Undergraduate Admissions Committee has promoted effective collaboration between the Colleges and the |

Faculty of Mathematics Silver Action Plan

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| | <p>Faculty, including agreement on best practice for diversity at College Open Days.</p> <ul style="list-style-type: none"> Increased awareness and shared best practice has led to collaboration between some Colleges and the Faculty, for specific outreach events aimed at schoolgirls. During our Open Days, female presence by Faculty members (Academic, Research and College staff as well as students) has been noticeably higher. Part of a general increase in participation by all staff, male and female. |
| New actions | <p>2.1 New flexible admissions criteria piloted with small number of Colleges.</p> <p>2.2 Continue with complete overhaul of undergraduate admissions website structure, content and language style.</p> <p>2.3 New initiatives for Open Days and for Oxbridge Conferences</p> <p>2.4 Regularly collect and monitor gender breakdown for Maths Masterclasses, Sutton Trust Summer Schools and Open Day attendees and speakers</p> <p>2.5 The Faculty is developing a new Prospectus for undergraduate applicants, to replace the current 'Guide to Admissions' and the 'Open Day pack'</p> <p>2.6 Outreach videos online so that a larger number of applicants get a chance to view them</p> |
| Responsibility | <p>2.1 Chair of MUAC (Dr Stephen Cowley)</p> <p>2.2 Faculty Admissions Officer</p> <p>2.3 Faculty Admissions Officer</p> <p>2.4 Cambridge Admissions Office</p> <p>2.5 Faculty Admissions Officer</p> <p>2.6 Faculty Admissions Officer</p> |
| Specific Measurables and Timelines | <p>2.1 Impact of alternative admissions offer monitored in 2018/19 and if there is a resultant increase in applications from women then extend to more Colleges in 2019/20 and 20/21</p> <p>2.2 Milestones agreed for website development for 2017 and 2018 with feedback sought from students in 2018. Increase of >10% of weekly hits on admissions website from the 2016/17 weekly average of 21,000</p> <p>2.3 Two new initiatives with >200 attendees in total in 2017, increased further in 2018 & 2019</p> <p>2.4 Increased numbers of female students attending Masterclasses and Summer Schools (from current 38% to >40%)</p> <p>2.5 Prospectus launched in 2017 with number of copies distributed monitored alongside hits on the website (annually in April)</p> <p>2.6 Videos developed and promoted online by February 2018. Extend number and collect feedback by February 2019.</p> |
| Objective | 3. To increase female undergraduate admissions, particularly home and state school students |
| Rationale | <ul style="list-style-type: none"> Students are required to take Sixth Term Examination Papers (STEP). STEP is administered externally by Cambridge Assessment and STEP results are part of offers made to almost all students. As with peer institutions although offers to female applicants mirror applications, currently women are more likely to not make their offer, resulting in a lower acceptance rate. |
| Priority | <ul style="list-style-type: none"> Medium |

Faculty of Mathematics Silver Action Plan

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| Actions to date | <ul style="list-style-type: none"> • Annual STEP Prep Easter/Summer Schools • New online STEP Support Programme providing weekly assignments from the summer of Y12 onwards designed to provide a graduated introduction to advanced problem-solving and support for STEP preparation. Additional support is provided by online discussion boards. • Full-day face-to-face STEP Support event in 2017 for Cambridge state-school Mathematics offer-holders |
| Impact | <ul style="list-style-type: none"> • More than 500 students have attended STEP Easter and Summer Schools since 2010. 188 UK state school Y13 offer-holders attended face-to-face STEP Support event in 2017 (28% Female). • Since September 2016, more than 1,100 users have shown meaningful engagement with the online programme (downloaded at least the first 4 assignments), and currently around 600 users have worked through the majority of the programme assignments to reach the advanced modules. 39 online modules have been published: in the period 1 September 2016 - 5 April 2017 these module assignments attracted over 33,800 unique downloads in total. |
| New actions | <p>3.1 Demand best practice in STEP, including blind-marking by Cambridge Assessment</p> <p>3.2 Monitor STEP performance by gender, in light of increased online STEP support</p> |
| Responsibility | <p>3.1 Cambridge Assessment</p> <p>3.2 Chair MUAC</p> |
| Specific Measurables and Timelines | <p>3.1 Reduce potential impact of unconscious bias on STEP marking with introduction of blind-marking by 2018</p> <p>3.2 Relationship between participation in online STEP course and STEP results by gender are more clearly understood following analysis and discussion in key committees. Further actions identified by June 2019</p> |

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| Objective | 4. To address attainment gap at undergraduate level |
| Rationale | <ul style="list-style-type: none"> • There is an attainment gap between male and female students across all years of undergraduate study. |
| Priority | <ul style="list-style-type: none"> • High |
| Actions to date | <ul style="list-style-type: none"> • A new Working Group, with representatives from the Athena SWAN panel, the Teaching Committee and MUAC, are now systematically collecting a huge data set to permit cohort tracking and better understanding of performance by gender • Faculty support for Emmy Nöether Society • Increased visibility of women on Faculty pages and publications • Results breakdown by gender included in examiners reports |
| Impact | <ul style="list-style-type: none"> • The reading list has been revised and includes more books by female mathematicians • Increased awareness and implementation of importance of female lecturers as positive role models. At least one female Lecturer has been ensured across all years of the undergraduate course since 2013 (with only one exception) • Emmy Nöether society booklet given to all new Maths undergraduates • Equality and Diversity segments included in all student inductions |

Faculty of Mathematics Silver Action Plan

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| New actions | <p>4.1 Collect data by gender for attendance and feedback at all support initiatives e.g. Saturday Maths café, Wednesday talks</p> <p>4.2 Analyse undergraduate results by year including progression. Analysis of cohort tracking data.</p> <p>4.3 Study evenings for women in CMS led by Corfield Lecturer and ENS (see also Action 1.3)</p> <p>4.4 Monitor gender distribution across colleges. Use Inter-collegiate supervision sessions for Colleges with small numbers of female students.</p> <p>4.5 Introduce Undergraduate buddy system (using 2nd / 3rd year female students to support 1st year students)</p> <p>4.6 Review of example sheets</p> <p>4.7 Extend supervisor training on how to challenge peer sexism and misbehaviour</p> |
| Responsibility | <p>4.1 Director of Undergraduate Education</p> <p>4.2 Chair of Teaching Committee</p> <p>4.3 Corfield Lecturer</p> <p>4.4 Faculty Admissions Officer/ Director of Undergraduate Education</p> <p>4.5 Faculty Admissions Officer</p> <p>4.6 Chair Teaching Committee/ Director of Undergraduate Education</p> <p>4.7 Director of Undergraduate Education</p> |
| Specific Measurables and Timelines | <p>4.1 10-20% increase in attendees at initiatives per annum with improvements introduced where required following feedback</p> <p>4.2 Initial data analysis completed in 2017. Further cohorts analysed in 2018 and 2019. Better understanding of performance by gender and factors contributing to attainment gap. Further actions identified and implemented.</p> <p>4.3 Year on year increases in number of attendees at activities coordinated by Corfield Lecturer</p> <p>4.4 Proactive identification of Colleges with small numbers of women (from September 2017) to allow additional support e.g. intercollegiate supervisions to be put in place at an early stage</p> <p>4.5 Additional level of support offered to students via peers on top of pastoral care in both Colleges and Faculty (from October 2019)</p> <p>4.6 Review completed by October 2018. Increased accessibility of examples sheets and impact of negative feedback minimised</p> |

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| Objective | 5. To collect and review Student feedback |
| Rationale | <ul style="list-style-type: none"> To permit an open and evidence-based approach to aid in recognition of what works well as well as what needs improvement |
| Priority | <ul style="list-style-type: none"> Low |
| Actions to date | <ul style="list-style-type: none"> Alongside National surveys (NSS, PTES and PRES) the Faculty ran 2 surveys in Easter 2014 and 2016 to evaluate students' perception of gender issues in maths. |

Faculty of Mathematics Silver Action Plan

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| Impact | <ul style="list-style-type: none"> • Specific action taken to address issues raised e.g. warning re: use of inappropriate language, provision of sanitary bins in all unisex toilets. • Programme of additional feedback and support put in place in 2016/17 in response to PTES results. |
| New actions | <p>5.1 Repeat Faculty Athena SWAN student survey.</p> <p>5.2 Encourage participation in National and Faculty course specific surveys.</p> |
| Responsibility | <p>5.1 Athena SWAN Committee</p> <p>5.2 Course Directors, Undergraduate and Graduate Office Managers</p> |
| Specific Measurables and Timelines | <p>5.1 Improved response rates to AS student survey from 41% and 37% in 2014 and 2016 respectively by >10% in 2018.</p> <p>5.2 Continue to develop actions in response to national survey results – look for improvement in feedback scores with an increase of >10% across key questions - see also Action 6.1.</p> |

GRADUATE STUDENTS

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| Objective | 6. To increase the level of feedback provided to PGT students |
| Rationale | <ul style="list-style-type: none"> • PTES results in 2015 & 16 highlighted students wanting more feedback on progress across the year. |
| Priority | <ul style="list-style-type: none"> • Medium |
| Actions to date | <ul style="list-style-type: none"> • The provision and attendance to various Part III support activities is now, where possible, regularly recorded by gender. • Creation of new Part III Officer post in DAMTP to support the work of the Graduate Education Officer in DPMMS • Women are invited to termly Women's lunch providing the opportunity to meet PhD students, researchers and Faculty |
| Impact | <ul style="list-style-type: none"> • Participation in support activities has increased. • Development of Part III Preparation Resources website to provide support for students before they start the course • Students surveys show female Part III students have higher expectations than before: 77% declared to aim for a distinction, compared to 64% in 2014. |
| New actions | <p>6.1 Marking of questions (2 per student) per example sheet. Reinforce to students and supervisors that marking is expected as part of example classes. Payment for non-academic staff for examples classes and marking</p> <p>6.2 Uptake by students of example class marking is low. Course Lecturers to highlight opportunity for feedback via marking and encourage students to submit work.</p> <p>6.3 Course Lecturers to highlight opportunity for feedback via marking and encourage students to submit work</p> <p>6.3 Part III Committee to review examples classes, marking and impact of additional workload for course lecturers.</p> |
| Responsibility | <p>6.1 Part III Course Directors</p> <p>6.2 Course lecturers</p> <p>6.3 Part III Course Directors</p> |
| Specific Measurables and Timelines | <p>6.1 New system of marking is successful resulting in improved feedback scores in PTES</p> <p>6.2 More students submit questions for marking</p> <p>6.3 Actions identified and implemented to mitigate the impact on those with very large courses</p> |

Faculty of Mathematics Silver Action Plan

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| Objective | 7. To address attainment gap in PGT courses |
| Rationale | <ul style="list-style-type: none"> Part III Committee monitor the performance of candidates based on gender and original source (internal MMath or external MAST) and noted that MAST females did noticeably worse and were more likely to get honours rather than distinction or merit |
| Priority | <ul style="list-style-type: none"> High |
| Actions to date | <ul style="list-style-type: none"> PhD students are trained and supported to give two hours of Catch up workshops across 11 topics not always taught in undergraduate courses in other universities. Development of Part III Preparation Resources website. The website is intended to be useful both to applicants (in the run up to their choice of whether to apply and what to expect) and to offer holders (to prepare for Part III over the preceding summer). |
| Impact | <ul style="list-style-type: none"> 270 attendees to catch up lectures in 2016 (11.1% female) The PhD students gain lecturing experience and receive advice on the syllabus to be covered and effective teaching practice through intensive one-to-one discussions. |
| New actions | <p>7.1 Monitor attendance at Part III support initiatives by gender.</p> <p>7.2 Study groups will be encouraged and their aim and usefulness explained in more detail</p> <p>7.3 Further development of Part III webpages including development of “worksheets” or example sheet suggestions for Part III offer holders to do over the summer so they can find out whether they do have an appropriate level in a given area or need to learn/revise some specific topic.</p> <p>7.4 The Faculty will change the way scripts are assigned numbers during anonymisation to prevent identification of MMath vs MAST candidates (see also Actions 6.1-6.3 above)</p> |
| Responsibility | <p>7.1 -7.3 Part III Course Directors</p> <p>7.4 Chair Part III Committee</p> |
| Specific Measurables and Timelines | <p>7.1 Increase in attendance by female students from 17% (average 2014-2016) to >20% which is higher than the proportion of female students on the course</p> <p>7.2 Student feedback on study group experience (via focus groups)</p> <p>7.3 MAST students find additional experience gained prior to starting the course useful (monitored via Part III survey)</p> <p>7.4 Potential impact of unconscious bias reduced in relation to MMath vs MAST students from 2016-17</p> |
| Objective | 8. Careers support and transferable skills development. |
| Rationale | <ul style="list-style-type: none"> Students need to be made aware of and prepared for a wide range of jobs |
| Priority | <ul style="list-style-type: none"> Medium |
| Actions to date | <ul style="list-style-type: none"> Increased level of support via an additional Part III Officer in place from 2016 (from DAMTP), sharing workload with the DPMMS Graduate Education Officer Current practices include Wednesday talks covering information on writing essays, applying for PhDs, talking to the careers service, revision strategies, exams & post-Masters placement summer projects |

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| | <ul style="list-style-type: none"> • Researcher Development Programmes (RDP) run by both Departments. • PMP and summer student placement projects with industry and other University Departments. |
| Impact | <ul style="list-style-type: none"> • >350 students attended RDP events in 2015/16 • Increasing proportion of women taking up summer research studentships (from 16% over the last 4 years to potentially 21% in 2017) from around 200 students in total |
| New actions | <p>8.1 Review researcher development programmes and offer one Faculty-wide programme (monitoring attendance by gender). Extend researcher development programme with interactive skills lectures including topics like job hunting and leadership</p> <p>8.2 Encourage more female participation in summer placements (e.g. holding short informal talks/workshops by female students who have done a summer placement)</p> <p>8.3 Publicise careers info including careers for mathematicians events and industrial seminars as part of PhD programmes.</p> <p>8.4 Review graduate student practices between two Departments and develop one student handbook which covers all PhD courses.</p> <p>8.5 Extend and monitor buddy scheme for new PhD students.</p> |
| Responsibility | <p>8.1 Departmental Administrators & RDP coordinators</p> <p>8.2 Summer Placements Coordinator</p> <p>8.3 Graduate Office</p> <p>8.4 Graduate Office Manager, DPMMS Departmental Administrator</p> <p>8.5 Graduate Education Officer</p> |
| Specific Measurables and Timelines | <p>8.1 Faculty-wide programme offered from 2017/18 with data collected by Graduate Office administrator. Simplified delivery and administration.</p> <p>8.2 Increase in female students undertaking summer placements (from 17% in 2016)</p> <p>8.3 Awareness of careers events increased across all student cohorts (measured by course specific surveys and PhD student focus groups)</p> <p>8.4 Graduate student practices between Departments are more closely aligned with communications streamlines via one handbook (currently 2 separate handbooks)</p> <p>8.5 Number of students taking up PhD student buddy scheme monitored by gender and feedback sought on an annual basis</p> |

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| Objective | 9. To increase numbers of postgraduate applications from women |
| Rationale | <ul style="list-style-type: none"> • The proportion of female postgraduate students admitted is lower than the national average |
| Priority | <ul style="list-style-type: none"> • High |
| Actions to date | <ul style="list-style-type: none"> • Participated in first University-wide Graduate Open day in 2016 |

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| Impact | <ul style="list-style-type: none"> • Higher proportion of women accepted than apply • Departmental underwriting used to make early fully funded offers which was key to securing outstanding female applicants |
| New actions | <p>9.1 Targeted advertising of graduate scholarships (PhD)</p> <p>9.2 Targeted advertising of Part III programme (MASt)</p> <p>9.3 Complete overhaul of website structure, content and language style to match new undergraduate pages</p> <p>9.4 Monitor applications, offers and acceptances by broad subject area</p> <p>9.5 Explore new ways of encouraging students, particularly females, to apply for further studies and research: perhaps some mostly female workshops/events, social/academic events with current female researchers in Cambridge.</p> <p>9.6 Review student destinations by gender via data collected by the University Careers Service and develop actions where appropriate</p> |
| Responsibility | <p>9.1 Directors of Graduate Education</p> <p>9.2 Part III Course Directors</p> <p>9.3 Web development team</p> <p>9.4 Graduate Admissions Officers</p> <p>9.5 ENS/Graduate Office</p> <p>9.6 Graduate Office Manager and Careers Service</p> |
| Specific Measurables and Timelines | <p>9.1 Increased number of applications from female students (>10% by 2019) to exceed 17% in 2016.</p> <p>9.2 >10% increase in number of MAST female admissions by 2018 (compared to 2016 figure of 15.2%).</p> <p>9.3 New webpages launched in 2018. Increased visits to website, as monitored with Google analytics. Positive feedback from students.</p> <p>9.4 Better understanding of female student preferences and areas of focus for attracting more students</p> <p>9.5 >2 events per annum with >50 attendees per year.</p> <p>9.6 Better understanding of Maths undergraduate and Masters student destinations by gender by 2019. Remedial actions, if needed, put in place by 2020.</p> |

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STAFF: RECRUITMENT, RETENTION AND CAREER DEVELOPMENT

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| Objective | 10. To increase numbers of women research and academic staff |
| Rationale | <ul style="list-style-type: none"> • Proportions of female academic and research staff below national averages |
| Priority | <ul style="list-style-type: none"> • High |
| Actions to date | <ul style="list-style-type: none"> • Additional sentence added to all adverts to encourage women to apply • All jobs advertised via women at maths networks as well as via collaborator networks • Innovative new lectureships advertised with specific requirements to develop the role of women in Mathematics |
| Impact | <ul style="list-style-type: none"> • Four new women lecturers appointed in last three years including Corfield Lecturer in association with Murray Edwards College. Anticipate a fifth appointment from Sheila Edmonds Lectureship by summer 2017. • Increased proportion of applications from women to 18% with a high of 50% for specific recruitments e.g. Corfield Lectureship • Overall, the two confirmed new lectureships with a focus on women in mathematics (alongside a third potential position with another College) represents a financial commitment of ~£4.5million |
| New actions | <p>10.1 Actively encourage all those involved in recruitment and promotion at any level to undertake unconscious bias training</p> <p>10.2 Continue to use Women's networks to advertise posts. Alert HoDs of other Institutions when new posts available</p> <p>10.3 Departments to maintain a database of seminar speakers, former students, contacts made at conferences. Monitor for appropriate gender representation and use to encourage applications for new positions.</p> <p>10.4 DPMMS to support an additional post in Murray Edwards College to support Corfield Lecturer (joint CTO/SRA).</p> <p>10.5 New Lectureship in DAMTP in conjunction with Newnham College. DAMTP in talks with another College about a third such position.</p> <p>10.6 Consider mechanisms of support for dual career academics to combat competition from US and elsewhere</p> |
| Responsibility | <p>10.1 HoDs</p> <p>10.2 HR Manager</p> <p>10.3 2 Departmental Administrators</p> <p>10.4 HoD DPMMS, President Murray Edwards College</p> <p>10.5 HoD DAMTP, Principal Newnham College</p> <p>10.6 HoDs</p> |
| Specific Measurables and Timelines | <p>10.1 List compiled of those who have attended training. All recruitment panel members trained by end 2018. Support School unconscious bias training events and monitor attendance.</p> <p>10.2 & 10.3 Active recruitment practices continue to attract female candidates – applications for academic and research posts consistently >20% per annum (currently ~17%)</p> <p>10.4 & 10.5 Two new women appointed and in-post by end 2017 with a third post filled in 2018</p> |

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| | 10.6 Faculty to press University to investigate more support and flexibility for dual career academic couples |
| Objective | 11. Career Development for academic and research staff |
| Rationale | <ul style="list-style-type: none"> Support needed for career development and retention of researchers at all stages of their careers (from postdoc to Professor) |
| Priority | <ul style="list-style-type: none"> Medium |
| Actions to date | <ul style="list-style-type: none"> Researchers applying for fellowships are offered application support and mock interviews. Academic staff supported through annual University promotions process Researchers are informed of opportunity to apply for salary increments three times a year (10 applications in 2016 & 2017, 30% Female, 90% success rate) Researchers have mentors as well as receiving career advice from their PI Academic staff mentored for probation and promotion Data on postdoc destinations currently collected from PIs. |
| Impact | <ul style="list-style-type: none"> Promotions success rate is very high across the Faculty (100% for women) |
| New actions | <p>11.1 Continue to support career development of new and existing academic staff through probation and promotions processes</p> <p>11.2 Monitor success rate of researcher increments by gender and Department</p> <p>11.3 Exit surveys for collation of destinations of staff, particularly researchers</p> <p>11.4 Develop redeployment factsheet to highlight available support</p> |
| Responsibility | <p>11.1 HoDs</p> <p>11.2 HR Office Manager</p> <p>11.3 HR Office Manager</p> <p>11.4 HR Office Manager</p> |
| Specific Measurables and Timelines | <p>11.1 Academic staff feel supported through promotions process and new lecturers feel supported to establish research careers in the Departments</p> <p>11.2 Researcher increment applications and successes recorded and actively reviewed annually with action to redress gender imbalances if required</p> <p>11.3 Exit survey introduced in 2017 and results reviewed annually in July. Researchers from the Faculty continue to successfully populate Faculty across the world</p> <p>11.4 Increased awareness of redeployment support (>50% in 2018 survey cf 13% 2014)</p> |

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| Objective | 12. Career Development for professional and support staff (PSS) |
| Rationale | <ul style="list-style-type: none"> There is not a clear path for the promotion of professional and support staff in the University. |
| Priority | <ul style="list-style-type: none"> Medium |
| Actions to date | <ul style="list-style-type: none"> A number of Faculty PSS have benefitted from secondment opportunities and regrading to support career development and movement across University. |
| Impact | <ul style="list-style-type: none"> From 2015/16, all PSS in both Departments have been appraised. |
| New actions | <p>12.1 Continue to support secondment opportunities, and related initiatives such as job shadowing, for PSS</p> <p>12.2 PSS across the Faculty will continue to be appraised on an annual basis.</p> |
| Responsibility | <p>12.1 2 Departmental Administrators</p> <p>12.2 2 Departmental Administrators</p> |
| Specific Measurables and Timelines | <p>12.1 Review conducted with staff currently on secondment to identify lessons learned as well as actions to further develop their careers post-secondment</p> <p>12.2 Annual appraisals for all PSS. DAs to review summary of development needs across the Faculty and address with in-house training where possible</p> |

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| Objective | 13. To increase numbers attending personal and professional development opportunities |
| Rationale | <ul style="list-style-type: none"> No specific programme of development for researchers offered beyond University PPD programme |
| Priority | <ul style="list-style-type: none"> Low |
| Actions to date | <ul style="list-style-type: none"> All staff receive termly calendars of training information for personal and professional development |
| Impact | <ul style="list-style-type: none"> >450 training events attended over last 3 years (44.5% female) |
| New actions | <p>13.1 Locally delivered bitesize training sessions covering a range of topics</p> <p>13.2 Training opportunities identified and encouraged during appraisals</p> <p>13.3 Faculty to trial Leadership workshops with PIs</p> |
| Responsibility | <p>13.1 2 Departmental Administrators</p> <p>13.2 Appraisers and appraisees</p> <p>13.3 PPD/DAMTP Departmental Administrator</p> |
| Specific Measurables and Timelines | <p>13.1 Deliver 3 sessions in 2017/18 and monitor attendance. Repeat in 2018/19 and beyond if successful</p> <p>13.2 DAs to review summary of development needs across the Faculty and address with in-house training where possible</p> <p>13.3 >6 new or aspiring PIs of both genders attending workshops in 2017/18</p> |

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| Objective | 14. To support grant applications, outputs and impact for academic staff |
| Rationale | <ul style="list-style-type: none"> Faculty needs broad portfolio of research funders to support world-leading research. REF 2014 performance could be improved. Lower proportion of eligible women submitted. |
| Actions to date | <ul style="list-style-type: none"> Appointment of new Finance Officers in both Departments in last 2 years offering grant support Knowledge Transfer Facilitator post created in 2015 |
| Priority | <ul style="list-style-type: none"> Low |
| Impact | <ul style="list-style-type: none"> Research income has increased in both Departments KTF post effectively supporting connections with industry for both academics and researchers as well as studentships/internships |
| New actions | 14.1 New DAMTP Research Facilitator post 14.2 Preparation for REF2021 including Impact case studies 14.3 Consider support mechanisms for all REF-eligible women in the Faculty 14.4 Implementation of recommendations from Strategic Research Review 14.5 To encourage and support more grant applications from women in the Faculty, including new lecturers |
| Responsibility | 14.1 DAMTP Departmental Administrator 14.2 Knowledge Transfer Facilitator 14.3 HoDs 14.4 HoDs 14.5 HoDs/DAs |
| Specific Measurables and Timelines | 14.1 Research Facilitator position filled by end 2017 and working in collaboration with KTF, finance teams and academics 14.2 KTF supports REF submission with early and ongoing development of impact case studies uploaded to University repository 14.3 Early identification of REF-eligible staff in the Faculty with support offered where needed to ensure a balanced submission of eligible candidates by gender 14.4 Recommendations from Strategic Research review considered with appropriate actions and timelines for implementation identified by end 2018 14.5 Proportion of grant applications from female staff increased from 11% to align more closely to the percentage female staff by 2020 |

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STAFF: CULTURE AND COMMUNICATION

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| Objective | 15. To collect feedback from all staff groups |
| Rationale | <ul style="list-style-type: none"> To permit an open and evidence-based approach to aid in recognition of what works well as well as what needs improvement. |
| Priority | <ul style="list-style-type: none"> Low |
| Actions to date | <ul style="list-style-type: none"> School Staff survey run in 2015, key areas of focus identified for Faculty including induction and appraisal Focus Groups with specific staff groups run in 2017 |
| Impact | <ul style="list-style-type: none"> Induction for all new staff introduced and managed by HR Office All new academic staff, researchers and PSS staff have been appraised in the last two years with uptake of training for appraisers and appraisees 4 focus groups run in 2017 (36 attendees) to gather feedback from specific staff groups which have informed AS Silver action plan |
| New actions | 15.1 Faculty staff survey run in 2018 to seek feedback on key areas. |
| Responsibility | 15.1 Athena SWAN Committee |
| Specific Measurables and Timelines | 15.1 Relatively Low engagement in School based survey (56% completion) addressed by development of targeted, relevant Faculty survey. Aim for 10-20% increase in completion rates across all staff groups. Survey to show increase in positive responses particularly in areas such as induction and appraisal. |

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| Objective | 16. To increase awareness and up-take of family-friendly and work life integration policies |
| Rationale | <ul style="list-style-type: none"> Family friendly and work life integration policies could be more actively disseminated and uptake increased |
| Priority | <ul style="list-style-type: none"> Medium |
| Actions to date | <ul style="list-style-type: none"> Three members of staff have been supported in their applications to the Returning Carers Scheme Departmental Administrators and HR team provide 1:1 support for staff going on and returning from leave University is providing new initiatives from 2017 include SPACE network and My Family Care Service |
| Impact | <ul style="list-style-type: none"> Three members of staff have made successful applications to the Returning Carers Scheme, with funding for two applicants topped up by Departments when full funding not provided by University |
| New actions | 16.1 Promote SPACE events and host a SPACE event at CMS 16.2 Promote My Family Care Service and offer funds to pay for a number of days per year of the service for staff 16.3 Promote the Shared Parental Leave policy and enhanced shared parental pay to all relevant staff 16.4 Support applications to the Returning Carers Scheme 16.5 Ensure University wellbeing initiatives are shared across the Faculty 16.6 Increase awareness and up-take of work life balance policies by providing easily accessible information and links on the Faculty website |

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| | 16.7 Develop local guidance on how to promote and support flexible working 16.8 Document to be provided to all new starters to highlight family friendly information |
| Responsibility | 16.1 DPMMS Departmental Administrator 16.2 HR Office and HoDs 16.3 HR team 16.4 HoDs and Departmental Administrators 16.5 Departmental Administrators 16.6 HR team 16.7 HR team 16.8 Departmental Administrators |
| Specific Measurables and Timelines | 16.1 One SPACE event hosted per annum with >25 attendees 16.2 My Family Care highlighted in bulletin and by HR office at induction. Uptake and cost monitored annually. 16.3 Awareness measured by pulse staff survey in 2018 (>50%) 16.4 More successful applications for Returning Carers Scheme with impact collected for current recipients and Departmental support offered in underfunded cases 16.5 Awareness measured by pulse staff survey in 2018 (>50%) 16.6 Awareness measured by pulse staff survey in 2018 (>50%). New webpages developed by end 2018. 16.7 Guidance developed by end 2018 and flexible working discussions encouraged as part of appraisals process 16.8 New document based on other good practice examples in the University developed for new starters by October 2017 |

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| Objective | 17. To promote equality and diversity across the Faculty |
| Rationale | <ul style="list-style-type: none"> • Creating an inclusive working environment where all staff and students are valued |
| Priority | <ul style="list-style-type: none"> • Medium |
| Actions to date | <ul style="list-style-type: none"> • The take up of E&D training amongst staff is very high. E&D training is mandatory for all staff involved in recruitment and supervision and included as part of induction for all new staff • University Unconscious Bias workshop hosted at CMS in 2016. Take-up amongst staff has been low due to limits on numbers and availability. University introduced a new Unconscious Bias online module in January 2017 • Royal Society video and factsheet shared across Faculty. • Equality and Diversity briefings part of all new student inductions and E&D training mandatory for all new staff |
| Impact | <ul style="list-style-type: none"> • E&D training figures have increased from 26% to 87% in the last 3 years • 76 attendees (51% female) at unconscious bias training event hosted in Faculty in 2016 • Changes in culture evidenced by responses to student Athena SWAN survey • Seminar speakers by gender monitored and figures highlighted by Head of Department at termly staff meetings |
| New actions | 17.1 Develop official guidance on ensuring a balanced and diverse range of speakers including core hours best practice |

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| | <p>recommendations</p> <p>17.2 Ensure balanced and diverse presence of photos and news about achievements and research throughout the Faculty website.</p> <p>17.3 Improve planning and publicity of termly lunches for female mathematicians; consider increasing the frequency of this regular event and/or including other types of regular events (e.g. Speed Mentoring)</p> <p>17.4 Continue promoting the activities of the Emmy Nöether Society, but also engage further to publicise events and opportunities aimed at female students and researchers.</p> <p>17.5 Ensure that all newcomers to the Faculty (students and staff) are aware of the availability of E&D contacts and of Women Advisers</p> <p>17.6 Link to national and international E&D celebrations and anniversaries and ensure that a feature appears on the Faculty website</p> |
| Responsibility | <p>17.1 DPMMS PA to Head of Department</p> <p>17.2 Web development team</p> <p>17.3 Chair Athena SWAN Committee</p> <p>17.4 Chairs Emmy Nöether Society/Athena SWAN Committee</p> <p>17.5 HR Office/E&D contacts</p> <p>17.6 PA to DAMTP Secretary/PA to DPMMS HoD</p> |
| Specific Measurables and Timelines | <p>17.1 Faculty handout produced and published on our website as well as given to all seminars organisers by early 2018. Number of women speakers increased by >10% (from current 23%)</p> <p>17.2 Diversity of images reviewed as part of wider web development programme</p> <p>17.3 Increase attendance at termly women's lunches (60 to >80 per annum)</p> <p>17.4 >10 events run per annum in conjunction with ENS, Athena SWAN and Corfield/Newnham Lecturer</p> <p>17.5 E&D contacts and women's advisors included in new staff and student inductions</p> <p>17.6 New features in website and in bulletins promoting E&D</p> |

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| Objective | 18. To improve communication across Departments and the Faculty |
| Rationale | <ul style="list-style-type: none"> Staff survey results suggested communications could be improved across the Faculty |
| Priority | <ul style="list-style-type: none"> Low |
| Actions to date | <ul style="list-style-type: none"> DAMTP fortnightly bulletin introduced in 2015 Induction packs for all new staff from 2015 Information screens Information cascaded at termly staff and administrator meetings Office of Postdoctoral Affairs event hosted by HoDs in 2016 - Low engagement of researchers with OPdA |
| Impact | <ul style="list-style-type: none"> Regular communications across DAMTP |

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| | <ul style="list-style-type: none"> • Rate of induction for new staff almost 100% • Regular administrator meetings from 2016 |
| New actions | 18.1 Update induction pack for Faculty and support development of School of Physical Sciences Induction Pack 18.2 Introduce meetings for research staff. Link to development of research staff society. 18.3 Continue joint administrator meetings between both Departments. 18.4 Revise how events and news are publicised (e.g. Faculty Bulletin, enhance visibility of talks on screens, Athena SWAN posters) |
| Responsibility | 18.1 Departmental Administrators 18.2 DPMMS Departmental Administrator/Office of Postdoctoral Affairs 18.3 Departmental Administrators 18.4 Departmental Administrators |
| Specific Measurables and Timelines | 18.1 Induction pack updated for Faculty and provided to School by October 2017 18.2 Increased engagement of researchers with OPdA – Faculty Postdoc Society introduced if sufficient interest 18.3 Engagement of staff and communication between Departments improved 18.4 Improved communications evidenced by staff survey in 2018 |

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| Objective | 19. To monitor workload for all academic staff |
| Rationale | <ul style="list-style-type: none"> • Transparency of academic workloads and mitigation of imbalances, avoiding committee and administration overload |
| Priority | <ul style="list-style-type: none"> • Medium |
| Actions to date | <ul style="list-style-type: none"> • Both HoDs currently review teaching, committee and administration commitments annually. • Annual survey designed and agreed in 2017 to ensure all information is captured. |
| Impact | <ul style="list-style-type: none"> • Collegiate approach to Departmental duties fostered by HoDs, including regular rotation of particularly burdensome duties including examiners for undergraduate courses • Extensive discussions with HoDs and academic staff to agree capture of workload information |
| New actions | 19.1 Work with IT team to develop an online system for populating workload database and ensure workload is transparent between all academics and takes account of all committee membership including Athena SWAN and external committees 19.2 Consider committee representation by gender and additional responsibilities/core hours recommendations as part of annual workload review 19.3 To increase representation without overburdening the small number of academic women, College Teaching Officers and Research Fellows will be encouraged to put themselves forward for committee membership 19.4 Consideration of core hours and additional responsibilities |
| Responsibility | 19.1 DPMMS Departmental Administrator 19.2 HoDs |

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| | 19.3 HoDs |
| Specific Measurables and Timelines | 19.1 Online system in place by end 2017 and used by HoDs in 2018 19.2 Holistic overview of individual responsibilities as well as gender representation on committees 19.3 Reduction in overburdening of academic women with committee and administration experiences gained for other female staff |
| Objective | 20. To continue embedding of Athena SWAN in Faculty |
| Rationale | <ul style="list-style-type: none"> • Consideration of equality and diversity needs to be part of everyday business of the Faculty |
| Priority | <ul style="list-style-type: none"> • Low |
| Actions to date | <ul style="list-style-type: none"> • Athena SWAN Committee has met between monthly and termly for the last 4 years • Data broken down by gender discussed in multiple Faculty Committees |
| Impact | <ul style="list-style-type: none"> • Bronze action plan progress discussed regularly with new actions identified and implemented |
| New actions | 20.1 The Athena SWAN Committee will meet at least termly to ensure progression of the action plan. Oversight of implementation will be the responsibility of working groups, each with specific areas of focus. 20.2 Membership will be refreshed and a new Chair elected by start of 2017/18 academic year. Terms of reference for the committee will be amended to ensure a member of the Emmy Nöether Society is always on the committee. 20.3 The panel will provide regular updates at Staff Meetings, an annual report to the Faculty Board and to the University Equality and Diversity Section. |
| Responsibility | 20.1 Chair Athena SWAN Panel 20.2 HoDs 20.3 Faculty administrator/Athena SWAN coordinator |
| Specific Measurables and Timelines | 20.1 Progress against Silver action plan regularly monitored with new actions identified and implemented 20.2 Committee membership refreshed while maintaining a degree of continuity. New Chair to replace current Chair who will be going on sabbatical. 20.3 Responsibility for actions and communications regarding progress spread beyond Athena SWAN committee. Three updates per year with an annual report published on the website |