EUGAIN

Best Practices from Ph.D. to Professor

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Acknowledgement

This publication is based upon work from COST Action EUGAIN CA19122 (European Network For Gender Balance in Informatics), supported by COST (European Cooperation in Science and Technology).

EUGAIN features more than 160 members from over 45 countries, including 5 non-European ones. Its main aim is to improve gender balance in Informatics through the creation and strengthening of a truly multi-cultural European network of academics working at the forefront of the efforts in their countries, institutions and research communities. It builds on their knowledge, experiences, struggles, successes, and failures, learning and sharing what has worked and how it could be transferred to other institutions and countries.

Informatics Europe, the Grant Holder institution of EUGAIN COST Action, unites and empowers the Education & Research Informatics community across Europe. It connects over 50,000 researchers from 200+ member institutions spanning 30+ countries. The organisation advocates for shared priorities and supports policy making in Education, Research and the Social Impact of informatics in Europe. EUGAIN builds upon the groundwork laid by the Informatics Europe Women in Informatics Research and Education (WIRE) Working Group, which has since evolved into the Diversity & Inclusion Working Group. More information: www.informatics-europe.org

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Authors

- **Brenda Murphy**
  University of Malta, Malta
- **Carla Teixeira Lopes**
  University of Porto, Portugal
- **Emanuela Merelli**
  University of Camerino, Italy
- **Mara Gabriela Diaconu**
  Norwegian University of Science and Technology, Norway
- **Marie Gallais**
  Luxembourg Institute of Science and Technology, Luxembourg
- **Paula Alexandra Silva**
  University of Coimbra, Portugal
- **Silvia Ghilezan**
  Mathematical Institute SASA & University of Novi Sad, Serbia
- **Steve Kremer**
  Inria Nancy Grand'Est, France

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Introduction

Despite growing awareness, women are still seriously underrepresented in STEM (Science, Technology, Engineering, and Mathematics) areas. According to the She Figures 2021 report (European Commission and Directorate-General for Research and Innovation 2021), the European Union (EU) has almost achieved gender parity among doctoral graduates (48.1% of women in 2018). Despite this progress, important gender gaps persist in certain broad fields of study.

According to (European Commission and Directorate-General for Research and Innovation 2021), women are less likely to be employed as scientists and engineers. Similarly, they are under-represented among self-employed professionals in Science and Engineering (S&E) and Information and Communication Technology (ICT) occupations (24.9% of women in 2018). Women continue to be under-represented among Doctoral graduates in the majority of narrow STEM fields (Physical Sciences (38.4%), Mathematics & Statistics (32.5%), ICT (20.8%), Engineering & Engineering trades (27%), Manufacturing & Processing (40.9%), and Architecture & Construction (37.2%)). A higher proportion of women researchers worked part-time (11.1% of women and 7.2% of men in 2019) and under precarious working contracts in the Higher Education Sector (HES) across the EU (9% of women researchers and 7.7% of men in 2019). Women are under-represented at the highest level of academia (grade A, i.e., equivalent to full professorship) - with minor improvements documented between 2015 and 2018 (from 24.1% to 26.2%). While women are relatively well-represented among grade A staff in Humanities (35% in 2018), there is a minimal presence in the field of Engineering & Technology (17.9% in 2018). Women also remain underrepresented among the heads of higher education institutions (23.6% in 2019), and as board members (31.1%) and leaders (24.5%).

Research, in particular, requires creative thinking, and diversity is key to boosting creativity. In this booklet, we identify good practices throughout the academic career—from PhD to Professor—that facilitate equal opportunities for women and other minority groups. We hope that this booklet will raise awareness around some of the key issues and problems, unpack reasons why women remain underrepresented, and detail strategies to improve gender balance and diversity. In each section we give examples of good practices that have been implemented, and we hope they may inspire deployment in other institutions. Finally, we wish to acknowledge that many recommendations of this booklet are inspired by the Informatics Europe booklet *"More women in informatics and education"* (Bujdosó et al. 2016), and our booklet can be considered a revised version of their work.

Note: We opted for a gender sensitive bibliography style: in order to increase visibility we have cited women and men by including their first name in full.

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The under-representation of women in senior and leadership positions in academia is a reality. European level data shows that in 2018, women represented more than 40% of academic staff but only occupied around a quarter (and only 17.9% in Engineering & Technology) of the equivalent full professorship positions (European Commission and Directorate-General for Research and Innovation 2021). Research shows that bias against women operates in recruitment and selection processes, affecting recruitment advertisements, the composition and working methods of selection committees, and the language used in evaluations (Gvozdanović and Maes 2018). (Casad et al. 2021) suggest that lack of gender parity is due to prevailing negative stereotypes that impact on hiring discrimination and opportunities for advancement. They argue that women in STEM have "lower social capital which limits opportunities; perceive their academic climate as unwelcoming, and report hostility in their work environments (for example, sexual harassment and discrimination)". They describe three factors that contribute to gender inequalities and women's departure from academic STEM fields: (a) numeric underrepresentation and stereotypes, (b) lack of supportive social networks, and (c) chilly academic climates. Next, we present a list of recommended best practices for recruiting women in higher education.

- When writing the Recruitment Advert ensure that the process considers the following aspects.
  - Use inclusive language.
  - Advertise openly for all positions, stating that you are an equal opportunity employer.
  - State that the university/department/institute is committed to facilitating the combination of work and childcare in the recruiting media and in job descriptions.
  - State that flexible terms of employment are possible, such as working part-time and flexible working hours.
  - Emphasise that jobs in Informatics allow more opportunities for tele-commuting and tele-working, compared to other fields.
- When advertising the position consider the following.
  - Allow 3 months for applications to be submitted. Time is needed for the advertisement to reach the right women, and they need time to respond.
  - Approach candidates directly. For example, send the advertisement personally to, at least three women you would like to see in the position and invite them to apply.
  - Approach candidates indirectly. Invite colleagues to send the advert to three other women they think would be suitable for the post.
  - Distribute advertisements across a number of channels. For example, send them to women's networks' email lists, such as national women in tech networks or networks of female professors.
- Consider using positive actions
  - Take action if too few suitable women apply. For example, extend the deadline for applications and re-advertise the position (inter)nationally.

– Re-examine the applications and consider re-advertising if the initial list of candidates selected for interview does not include any women?

– Use quotas or dedicated positions. In a number of countries, the 'cascade model' is being introduced, following the German example. In this model, the institutions set targets for the proportion of women at each qualification level on the basis of the proportion of women at the level immediately below.

Application of the CASCADE model, Germany

German research institutions, including the Friedrich-Alexander Universität Erlangen-Nürnberg (FAU), the Helmholtz Association, and the German Leibniz Association, have introduced flexible quotas for the shares of female employees according to a cascade model (Sekuła and Pustułka 2016). In this stepped model, the actual ratio of a career level becomes the ideal ratio for the next career level (GFZ German Research Centre for GeoSciences 2022). Rates depend on the respective discipline and are calculated by a complex formula, including the percentage at the previous career level (MDC 2014).

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Gender bias that may occur in an evaluation process is very difficult to prove. However, a study by (Goldin and Rouse 2000) reported that the adoption of blind auditions increases the probability of women being hired in a previously male-dominated context of prestigious symphony orchestras, providing evidence of unconscious gender bias. Similarly, gender bias appears in recommendation letters which are often an important element when reviewing hiring or promotion applications. Researchers studied over 300 recommendation letters at a large medical school and have shown that the length, wording, and style significantly differ for male and female applicants favouring male applicants (Trix and Psenka 2003).

- Ensure that the composition of the hiring committee is as balanced as possible. For example, ensure that at least 30% of the committee consists of women.
- Appoint one or two members of the panel to be dedicated to monitoring gender issues and gender balance.
- Organise unconscious / implicit gender bias training in advance of interview/promotion boards for Interview / Promotion Panel Members.
- Forward guidelines (around unconscious bias in recommendation letters) to potential referees.
- Provide a gender sensitive template for applicants and/or referees. For example, does it explicitly include a section on career breaks.
- Provide / publish statistics in a multi-stage process (for example, ensuring that you retain the same % of female representation at every level of the process).
- Take into account career breaks (maternity leave, parental leave) with explicit identifications and rules. For example, some institutions allocate '18 months per child' when comparing female candidates who are Mothers, with other candidates.
- Consider explicit evaluation criteria. For example, do they value different or less typical profiles while evaluating applications, taking into account aspects such as software, interdisciplinary research, research data.
- You may also consider:
  - inviting women to interview not only to see whether they are best for the position, but also to give them experience of being interviewed and increase their status at their own institution.
  - providing help with solving the "two body problem", that is helping to find a position for the applicant's partner.
  - hosting open discussions around the issue of increasing the representation of women in the department when interviewing women and men, and asking how they would approach it. This provides extra tips and also shows the department is serious about the issues.

Application Evaluation at Inria, France

Each hiring and promotion panel at Inria has to follow a charter on Gender Equality and Equal Opportunities[a]*. The purpose of this charter is to draw the attention of the panel members to ensure gender equality and equal opportunities between candidates. It advises the panel chair and its members about best practices and stipulates rules to follow. These best practices include*

- *the appointment of two "gender equality and equal opportunities (GEO) leads" who will ensure that best practices are followed/applied,*
- *monitoring of statistics to detect bias, in particular to avoid the 'leaky pipeline' phenomenon (i.e., the fact that women resign at various points in their career increases the low numbers of female talent),*
- *provide advice on how to fairly treat diverse profiles, and avoid double standard-type mechanisms,*
- *take career breaks into account,*
- *detect potential bias in recommendation letters, and*
- *remind the panel chair to ensure that the panel's discussions give every member the chance to express their opinions.*

Before starting the evaluation process all committee members are also provided with a short documentation on unconscious bias and invited to watch the video "Recruitment Bias in Research Institutes"[b]*.*

[a] https://www.inria.fr/sites/default/files/2020-01/charter%20GEO.pdf
[b] https://www.youtube.com/watch?v=g978T58gELo

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The culture of an organisation or a department, or the views of the manager/director, can have a direct impact on whether women stay with an organisation or leave for something better that answers their needs (Gürer and Camp 2002; Sanzari, Dennis, and Moss-Racusin 2021; Shi et al. 2018). To retain female talent, organisations must ensure that female employees have the experiences and the resources to learn what they need most. This could include encouraging a proper balance of work and family (Gürer and Camp 2002; Sanzari, Dennis, and Moss-Racusin 2021; Shi et al. 2018), giving guidance for on-the-job learning, as well as coaching, mentoring, and workshops or programs (Klawe, Whitney, and Simard 2009).

- Have *Family Friendly Guidelines* in place for scheduling meetings. For example, only schedule meetings between 09:30 and 16:30, so carers of young children are able to deal with commuting and childcare.
- Have a Policy for disconnection, for example, honour the right to disconnect.
- Practice Positive Discrimination within the institution
  - for example, overcompensate the imbalance of women in the institute by their over-representation at institute colloquia. For instance, if 15% of the department is female, then make sure women give at least 25% of the talks. Invite external female speakers too.
  - for example, upgrade a postdoc position to a tenure track position when there is an excellent female candidate and she meets the criteria specified. Include a mid-term review of progress against the criteria.
- Promote an inclusive working environment
  - for example, organise a course for all senior staff members on unconscious bias. These sessions can cover all diversity issues, not just gender equality issues.
  - for example, allocate resources to initiatives such as promoting/encouraging womens' networks within the Department/Institute, including secretarial support and a budget for holding events such as lunches.
- Acknowledge and credit time spent on gender balance initiatives for example, count the hours colleagues spend on support and network issues in the same way as all other departmental commitments and duties are accounted for and valued (Do not assume that employees can deal with this extra load in their "spare time"!)
- Support parents:
  - fund childcare as part of conference travel expenses for participating faculty and researchers with young children.
  - provide specific rooms for breast-feeding.
  - fund travel expenses for a partner to go to the conference location during the breast-feeding period.

  - promote family friendly measures with regard to travelling to conferences with children. For example, inquire if conference venues have childcare facilities and personnel, and request organisers to provide attendees with childcare and breastfeeding options, and ensure that conferences organised by your department / institution provide such facilities.

- Other best practises
  - Distribute welcome packages with a booklet that lists childcare options as well as other useful info provided by faculty/institute members.
  - Create an 'Ambassador Program' or a personal development plan for researchers with high potential.
  - Ensure that at least 30% of the people on such a programme are women.
  - Provide visibility and self-promotion training for female researchers in both temporary and permanent employment.
  - Consult with women in the department/institution in order to gather opinions about the organisation, her role and her career ambitions and prospects (for example, organise lunch once a month with a different woman, at a different career level).

SUCCESS @ TU Dublin Computer Science

The SUCCESS (Source, Career, Environment, Support for SuCEsS) program of the Computer Science School at TU Dublin is a four strand approach:

- *Source: use networks to increase the number of female academic staff applying for academic positions.*
- *Career: run female-focussed skills development initiatives such as Performance Management Development Systems (PMDS) that allows female staff to articulate difficulties or aims with the School, fundings of early career researchers (for example, conferences, PhD supervision schemes, seed-funding of research proposals), and encouraging female staff to mentor more junior female staff (for example, co-supervision in PhD students).*
- *Environment: create an environment of support and encouragement for female staff (for example, offering role models, participating in the Women Leaders in Higher Education (WLHE) network).*
- *Support: implement practical supports that offer flexibility to female staff in particular after maternity leave*

As a result of the SUCCESS programme, in an academic team of approximately 55 full-time equivalents, 36% of the academic staff are female, 50% of our senior academic leadership team (2 of 4) are female and 75% of our School Executive are female (3 of 4), including a female Head of School (May 2019).

Caregiver and childcare support @ Schloss Dagstuhl

Schloss Dagstuhl supports parents who would otherwise not be able to attend the events due to a lack of childcare opportunities at home[a]. Schloss Dagstuhl offers the following childcare alternatives:

- *Guests are welcome to bring a caregiver of their choice (spouse, relative). This person receives free room and board and is accommodated in a room together with the child and parent(s).*
- *Qualified childcare (for children up to 12 years of age) is provided by the Schloss Dagstuhl nanny.*

[a] https://www.dagstuhl.de/en/guests/childcare

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Women continue to face barriers and challenges to move up the career ladder (O'Connell and McKinnon 2021). The under-representation of female researchers/decision-makers is understood in terms of the "leaky pipeline" (women resigning at various points in their careers) and the 'glass ceiling' (structural barriers that prevent access to senior positions). According to She figures (European Commission and Directorate-General for Research and Innovation 2021), women in grade A positions in ICT comprised 2,7% of women in the 1990s, and stood at 8% in 2020. Over the last thirty years, awareness of gender balance and gender blindness has increased (Jaccheri, Pereira, and Fast 2021; Sheeran 2022). In summary, while there are improvements at PhD level and early-stage research positions, there has been no significant progress in gender balance in research leading positions. This is recognised by European Research Area (ERA), UNESCO, and other world organisations (European Commission and Directorate-General for Research and Innovation 2021; Huyer 2022). However, the ERA commits to the development of inclusive Gender Equality Plans (GEP) across European academia and research institutions (LeTSGEP 2020).

- Ensure that there is a positive representation of women in Decision Making Positions and in Institutional Committees (for example, above the proportion of women in your department).
- Ensure a good proportion of women in committees in your department.
- Ensure that female members are not overloaded with these functions.
- Propose suitable women for prestigious tasks - i.e. tasks considered valuable for career advancement, such as prizes, representing the department, Ph.D. Committees, etc.
- When organising or supporting conferences, ensure that there is positive female representation across the list of invited speakers and members of program committees (for example, withdraw funding if there is no reasonable gender balance in keynote speakers).
- Run a mentoring program: in universities, mentorship programmes help promote researchers at all levels of academic success, further fueling their growth throughout their career journey.

Promotion at UCL, UK

In order to ensure equal consideration, all non-professorial members of staff are required to submit their CVs for consideration in a yearly meeting of the promotions committee. This goes beyond the standard UCL process which requires individuals to put forward an application to their Head of Department (HoD). Previously the committee would review only those non-professorial academic staff who submitted their CVs, and those considered worthy would be invited to apply for promotion. However, the survey results from 2013 indicated that only 51% of the staff members were satisfied with the process, 51% males and 45% females. The results of the survey prompted the Department to change its promotion procedures to that described above in which all non-professorial staff are required to submit their CVs and feedback is provided whether promotion is recommended or not. This feedback process is being further formalised into an appraisal starting this

year. The promotion criteria have remained unchanged recognising excellence in teaching, research, administration, pastoral and outreach work. This larger evaluation group was chosen to ensure that there is no bias created through, for example, differences in propensity for self-promotion. Potential candidates for promotion are identified by this group through a rigorous reviewing process that provides feedback to all staff through their Head of Group (HoG). Those identified are then invited to apply and appropriate letters of support are supplied by the HoD with suitable reference letter writers identified with the help of HoG.

Mentor Scientific Program, IDUN, NTNU, Norway

In Norway, at NTNU's Faculty of Computer Science and Electrical Engineering "IDUN – from PhD to professor[a]" mentorship project aims at increasing the number of female scientists in top positions in the faculty. IDUN Scientific Mentoring Program brings together researchers from different career levels, in similar fields, but still different, and gives them the opportunity to create new knowledge together. The scheme is flexible, confidential and fits mentees availability and preferences. It includes both men and women as a collaborative environment, but with a clear focus on women (70% of the mentees are women). The mentoring activities focus on group work on a specific research topic, networking, proposal writing and career planning activities. In the program, mentees stand to benefit from a range of things, like receiving encouragement and training from the university, interacting with other researchers to learn from their experiences; develop strategies for dealing with both personal and academic issues; gain valuable insight into researchers' next stage of their university journey, to name a few.

Mentors, on the other hand, can develop a range of skills including leadership, communication and personal skills; enhance their CV and development of new research; in addition to benefitting from a sense of fulfilment and personal growth. IDUN works on three different issues to improve gender balance: recruiting more women to all levels from Ph.D. to professor, helping to limit dropout of women and increasing the number of female scientists involved in international research projects.

[a] https://www.ntnu.edu/idun

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