CULTURE, OPERATIONS & PARTNERSHIPS

Faculty Development & Mentoring

Faculty Development & Mentoring

Executive Summary

School of Engineering & Applied Sciences (SEAS) at Washington University recognizes its faculty to be one of the most valuable resources to achieve *Leadership through Excellence*. Implementing effective practices in faculty mentoring and promoting faculty career development at all stages is highly important to ensure upward mobility, a strong sense of belonging and citizenship, and a strong desire to contribute at the limit of one's abilities among all faculty. SEAS at WashU has many unique advantages compared to Engineering schools at peer institutions. At the same time, SEAS faculty face a unique set of challenges and opportunities related to career development. This white paper provides a comprehensive summary of the current status (strengths and weaknesses) and specific recommendations related to faculty mentoring, career development and faculty retention. Apart from the recommendations that are aimed to promote faculty career development at all career stages, special emphasis was placed on aspects related to career development of junior faculty (assistant professors). Being at the inception of their independent academic career, junior faculty face a unique set of challenges that require special attention and a concerted school-wide effort to overcome these challenges. School-wide initiatives to create an ecosystem that facilitates the success of junior faculty is extremely important to achieve and sustain our mission of "Leadership through Excellence".

White paper working committee: Chakrabarty, Rajan; Genin, Guy; Lu, Chenyang; Pappu, Rohit; Raman, Barani; Singamaneni, Srikanth; Zhang, Silvia; and JSEAS Faculty group

---

Strategic Goal: Strategic goal of Faculty Development and Mentoring effort is to enhance, support, and facilitate the work environment essential for School of Engineering and Applied Science (SEAS) faculty at all career levels to attain their career goals and mission at Washington University.

Motivation: Faculty is one of the most valuable resources to achieve Leadership through Excellence. Effective practices in faculty mentoring and promoting faculty career development at all stages is highly important to ensure upward mobility, a strong sense of belonging and citizenship, and a strong desire to contribute at the limit of one's abilities among all faculty.

Status Quo:

<u>Strengths</u>

✓ Compared to many other engineering schools, SEAS is relatively small (faculty size under 100). It enables the administration to understand and address the needs/priorities of individuals or small groups of faculty. Considering that the needs and priorities of faculty members can be highly diverse (i.e. "one size doesn't fit all"), SEAS can certainly take advantage of the small faculty size.

✓ A consistent compliment we get from most of our visitors is the fantastic space (lab and office) available to most of the faculty in SEAS. Jubel Hall and McKelvey Hall will further improve our infrastructure.

✓ Quality of SEAS undergraduates is exceptionally high and favorably compares to the top engineering schools in the country

✓ Opportunity for SEAS faculty members to collaborate with School of Medicine (consistently within top 10) and School of Arts and Sciences.

✓ Burgeoning entrepreneurship and start-up scene in St. Louis, especially in bio-related areas.

<u>Weaknesses and Challenges</u>

✗ Relatively small size of SEAS makes it difficult to find collaborators in certain areas and build critical mass for center-level proposals

✗ Central facilities and resources are limited compared to those available at institutions with larger engineering schools.

✗ Due to the relatively small faculty size, the junior faculty gets drawn into services that might not help in building their research program or their tenure.

✗ Challenges associated with effective mentoring of junior faculty as they build research program and navigate tenure process. There is wide agreement among junior faculty that finding research active senior faculty excited and engaged in junior faculty mentoring with funding and research topic-relevant knowledge is too difficult and that this lack of mentoring has been, in part, associated with many negative outcomes experienced by junior faculty.

Recommendations

<u>Faculty Mentoring</u>

It is important to develop broader, systematic, and more robust mechanisms for faculty mentorship. Although faculty mentoring is particularly important for the success of junior faculty, it can be beneficial mid-career faculty.

- **School-wide plan for junior faculty mentoring:** Develop a robust school-wide junior faculty mentoring plan based on successful models in similar schools with incentive systems and reporting requirements. These models may include identification of appropriate mentors that are outside of SEAS or WUStl.

- **Broaden mentoring:** Promote Develop a mechanism/platform to incentivize successful established/senior faculty to provide useful feedback and guidance, both technical and non-technical, to junior faculty. The key is to not limit the mentoring role to one or a few "formal" mentors, but invite a broader pool of mentors across department and even school boundaries.

- **Incentivize mentoring:** Provide incentives for mentoring and establish mechanisms of accountability for both mentors and mentees.

- **Dedicated coach:** Hire a dedicated "coach" at SEAS level, who can interact with junior (and possibly mid-career) faculty on a regular basis to help them develop "academic research" skills (e.g., grant writing, research group management, and gaining visibility).

<u>Career Development</u>

- **Funding to help diversify research:** Most faculty members after earning tenure have a desire to diversify their research portfolio. To be successful in doing so, one requires some seed/startup funding to gather preliminary data. Their original startup package would have dried up at the end of 5 years. Currently, there is no incentive to financially help out a tenured faculty member diversify his/her research focus. It was noted that most top-ranking private schools (e.g. Harvard, Stanford) award a "second startup package" to their tenured faculty members to enable them try out new and creative ideas. SEAS faculty members (especially at the Associate level) would really benefit from such a package.

- **Sabbatical/mini-sabbatical:** After a few years of persistent effort in a set of research problems, most faculty members tend to look for opportunities to step out of their comfort zones and broaden their intellectual horizons by exploring research problems previously outside their radar. This exploratory endeavors that facilitate the faculty to cross traditional disciplinary research boundaries often lead to great breakthroughs. Sabbatical leave supported by most schools have traditionally facilitated such endeavors. While sabbatical is a great way to explore new areas of research, it is too infrequent (~3 times in a typical academic career) and sometimes not feasible. As an alternate strategy, SEAS can support faculty interested in pursuing a mini-sabbatical within other schools (e.g., School of Medicine, Brown School of Social Work, School of Arts and Sciences). This can be done during summer months. The school can provide graduate student support and a small research budget to evolve the mini-sabbatical to a sustainable research program between the intra-university host and guest.

- **Visibility/recognition:** Faculty generally feel that WashU faculty have much lower level of national recognition compared to peers at other schools with much lower level of accomplishments compared to our faculty. A school-wide effort to improve the visibility (e.g., news features) and recognition (e.g., awards at national and international meeting) of the faculty members can have a significant positive impact on the faculty research and SEAS brand. This is very important for mid-career faculty to maximize their impact and become highly recognized leaders in their fields.

- **Work/life balance:** A number of faculty members have expressed the importance of work/life balance for long-term sustainability of a productive academic career.

<u>Faculty Retention</u>

In our pursuit of Leadership through Excellence, retaining highly successful faculty in SEAS is equally important as attracting and recruiting best faculty at various levels.

- **Deeply evaluate and rate faculty activity:** The departments and SEAS administration should provide regular (e.g., yearly) and comprehensive feedback to faculty regarding their activity report. Also clear and uniform guidelines and expectations for promotion, and other forms of reward should be established. The faculty have to feel that the administration understands and values their contribution rather than having to rely on peer institutions to judge their contributions (offer letters from peer or higher ranked schools to establish their value)

- **Reinvest in the faculty:** Most faculty noted that salary and/or equity increment is a secondary factor when it comes to faculty retention. Factors such as endowment and internal seed/startup funding for laboratories play a bigger factor for continuing at a place and not seek opportunities elsewhere. The reinvestment effort should a streamlined rather than being an ad hoc process.

- **Funds for acquiring/maintaining instruments:** Instrument-heavy research groups often suffer from lack of funding to maintain existing instruments. Even more difficult is to buy new instruments. An internal funding mechanism that would enable a group of SEAS faculty to buy/maintain lab instruments would greatly incentivize faculty retention.

- **Endowment titles for associate professors:** It was noted that most junior/associate professors do not have an endowment title. Other universities reward their successful faculty members via endowments/ titles. At WashU, such an incentive program needs to be established.

- **Retention of most successful junior faculty:** Establish a specific plan to address the retention of the most successful junior faculty after the tenure process that is fair and equitable to the entire cohort of junior faculty seeking tenure.

- **Graduate student quality:** One of the important incentives for the faculty to move to other schools is larger and better graduate student pool. Create a SEAS-wide Ph.D. student recruitment strategic plan and effort with full-time dedicated staff to implement and evolve that plan.

Special recommendations to promote the success of Assistant Professors in SEAS:

Strategic planning committee recognizes that junior faculty (assistant professors) face a unique set of challenges and special measures have to be adapted to overcome these challenges. It is important to develop a SEAS ecosystem, policies, and operations that support and promote the success of junior SEAS faculty, that encourages a tight-knit community of junior SEAS faculty across departments, and that is cognizant of the unique and evolving challenges facing junior SEAS faculty.

Mentoring

- Provide incentives for mentoring and establish mechanisms of accountability for both mentors and mentees.

- Develop a robust school-wide junior faculty mentoring plan based on successful models in similar schools with incentive systems and reporting requirements. These models may include identification of appropriate mentors that are outside of SEAS or WashU.

- Develop a mechanism/platform to incentivize successful established/senior faculty to provide useful feedback and guidance, both technical and non-technical, to junior faculty. The key is to not limit the mentoring role to one or a few "formal" mentors, but invite a broader pool of mentors across department and even school boundaries

- Mock review panels for ALL CAREER proposals that are submitted from SEAS

Seeds grants

- Continue and improve (more, bigger and phased) the SEAS Collaboration Initiation Grant program (CIG2.0) to support research of junior, untenured tenure-track SEAS faculty.

Operations

- Provide more support to junior faculty to track and manage finances. Develop a system (i.e., online) for financial analysis and tracking of expenditures for PIs with queries for expenditures by fund, vendor, expenditure "category", salary, etc. reported as a function of time.

Culture

- Allow junior faculty to fully express themselves or be significant stakeholders and (ii) sufficiently prioritize the specific needs of junior faculty. In particular, issues of concern include how/how much required activity/ service commitments are assigned, inability to recruit quality PhD students from the available pools of first-year students, and insufficient influence in course assignments and new hire choices.

- A proper welcome should feel organized and coordinated from the highest levels of the school and should include a discussion of expectations (i.e., toward tenure); help with navigating the gauntlet of logistical activities during the first few weeks on campus; a general history of the campus; a description of the current organizational structure of the institution and its key administrators; a description of campus resources; and an outline of the near- and long-term direction/vision for the school. Critical guidance for first-year faculty hires should be provided in the form of written best practices for human resources, student advising, research group marketing, etc.

- Develop a new-faculty orientation program and effort that welcomes new junior SEAS faculty, makes all clear what the resources are that are available, discusses what the path is through all of the first years of being a PI, etc.

- Increase school support for JSEAS social events intended to build community among faculty and their family. Examples include: small group lunches between junior faculty from different school sponsored and organized by the dean and/or an annual Christmas/End of spring party for junior SEAS faculty.

Research group/Personnel

- Create mechanisms that increase the pools of competitive master's students, PhD students, and postdoctoral fellows across departments and that give junior SEAS faculty prioritized access to those pools.

- Implement a school-wide reporting requirement for chairs to track PhD students assigned to junior faculty or targeted for junior faculty during recruitment including their: (i) undergraduate GPA, GRE, and TOEFL score and (ii) graduate GPA and/or qualifier score. The intent is two-fold: (i) to help chairs and senior faculty track the "quality" of students that departments assign to/recruit for junior faculty and (ii) to promote internal policies that direct stronger students towards junior faculty.

- SEAS cover recruitment costs (i.e., funds for advertising in print/online formats and for 3 candidate visits) and two-years of fringe benefits for a postdoctoral fellow for each new faculty. Approval and release of these funds would be contingent upon (i) an advising session with a senior faculty covering "how to hire and manage a post-doc", (ii) two-years of funding salary being available for encumbering, and (iii) preparation of a research plan for the post-doc.

- Implement a process for monitoring student retention in labs of junior faculty and providing matched mentors to advise and assist in the recruitment and retention of students in junior faculty labs.

- Institute policies that provide incentives to graduate students that join the labs of junior faculty' during their start-up period.

- Create a program that identifies high-quality junior SEAS undergrad who plan on pursuing advanced degrees and then provides incentives for those students to perform undergrad research, attend perspective graduate student mentoring sessions, and participate in the NSF Graduate Research Fellowship Program Workshop.

Facilities