science walk with laureates or to attend a lunch at a restaurant with a Nobelist. The week was capped by the traditional boat trip to the island of Mainau, where the meeting's host, Bettina Bernadotte, countess of Wisborg, welcomed the group to the sprawling gardens and palace lawn for the week's concluding events.

The meeting program walked a line between a traditional conference and a quirky and unique celebration of science and scientists. And although lots of fun activities were scheduled throughout the week, serious topics, such as climate change and nuclear proliferation, dominated the talks and conversations. On those important topics, the scientists in attendance seemed divided on the appropriate role of physicists in society.

On one hand, we listened to Nobel laureates declare that funding agencies should allow physicists to pursue fundamental research without any justifying application—a statement that was greeted with enthusiastic applause from the audience. And we heard speakers urge the young attendees to focus their efforts on so-called "useless" physics and work on the science that they find fascinating, regardless of the broader applications and implications that the research might have.

On the other hand, sessions included the unambiguously titled "Physics-Based Solutions to the Energy Challenge" and "The Role of Physics in Solving Global Problems of the 21st Century." And many of the panels, Agora Talks, and events hosted by governmental, academic, and business partners were centered around discussions of practical applications of physics.

That action-minded stance on the role of scientists was demonstrated on the last day of the meeting, when we witnessed the Nobel laureates in attendance sign the Mainau Declaration 2024 on Nuclear Weapons. The document implores that "all nations must commit to ensuring that nuclear weapons never be used again." It echoes a plea signed on Mainau Island in 1955 by many of the scientists whose work had made such weapons possible and who sought to limit their discoveries' devastating effects on humanity. A similar declaration on climate change was signed in 2015, warning about the need for research and action.

The two of us departed this year's Lindau meeting with more questions than clarity on a fundamental and pressing matter: What responsibility do scientists have both to engage in research aimed at addressing global challenges and to participate in the ongoing conversations surrounding how the work will be used to shape our global community in the coming decades?

Miriam Hiebert
(mhiebert@umd.edu)
Kathryn Sturge
(ksturge@umd.edu)
University of Maryland
College Park

Demands on early-career faculty

In his article "Early-career faculty face many challenges" (Physics Today, October 2024, page 40), Alex Lopatka effectively points out some of the barriers to building a research program. But his discussion of teaching and teaching-related duties is brief, and when he does discuss them, he states, "Teaching pressures are common and add to faculty members' already busy schedules." The phrasing seems to imply that teaching is in competition with and of lower value than research. And notably, of the six questions Physics Today asked early-career faculty members for this article, none mention teaching.

The article's treatment of teaching is surprising to me. Fellow early-career faculty, at both large research universities and primarily undergraduate institutions, have told me that teaching and engaging students is a major challenge of theirs. The popularity of resources such as the Faculty Teaching Institute, which at least 2 of the 10 questionnaire respondents said they attended, speaks to this challenge.

Many academic institutions place a disproportionately low weight on teaching in their tenure evaluations,[1] and the article's heavy bias toward research perpetuates that disproportion. But the undervaluation of teaching by some does not change the fact that it's inherently a high-value activity and worth doing well.

Finally, despite having a section titled "Finding students," the article misses an opportunity to point out that teaching can be a great way to scout for research talent and recruit students. I personally try to approach my tenure requirements by looking for synergies—for example, between teaching and research, between grant writing and service, and between outreach and parenting my kids. That not only makes being an early-career faculty member more manageable—it makes it more fun.

Reference

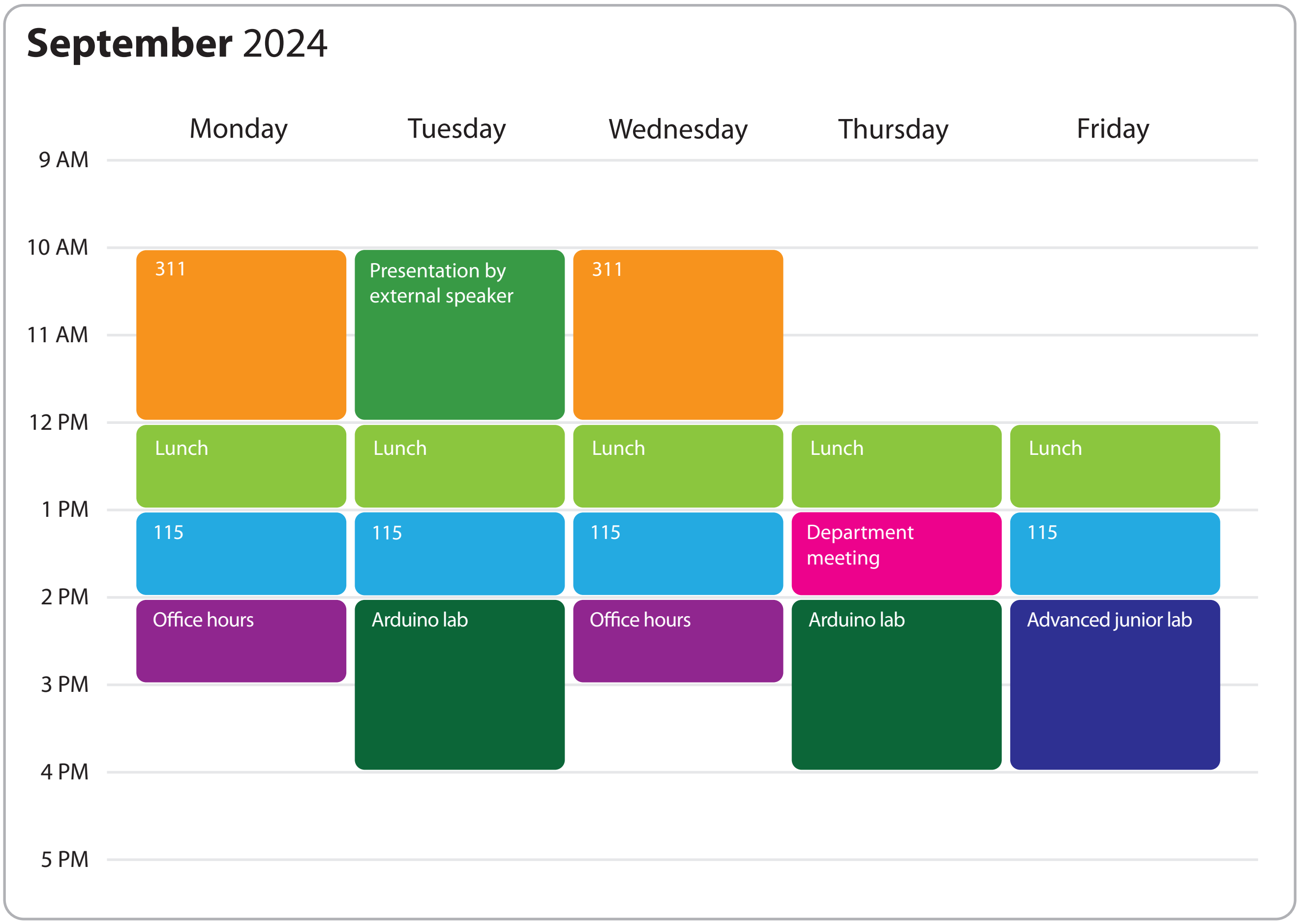
1. A. W. Murray, D. K. O'Dowd, C. D. Impey, *eLife* **8**, e50542 (2019).

Tyler Engstrom
(tyler.engstrom@unco.edu)
University of Northern Colorado
Greeley

~~~

I very much enjoyed Alex Lopatka's article "Early-career faculty face many challenges" (Physics Today, October 2024, page 40). In particular, when I read that "at a small liberal arts school, the pressures of research may be less, but the teaching load is likely larger" and then looked at the hypothetical daily schedule for an "academic" (page 43), I laughed out loud! Whatever will our "academic" faculty members do? They have a three-hour teaching load—how shocking!

I have been blessed to have a career spent in positions in colleges and universities that have a primary emphasis on teaching and a lower level of research expectation. In 29 years as a professor, my lightest teaching load for any
~~~



THE AUTHOR'S SCHEDULE last semester. (Illustration by Freddie Pagani.)

semester was eight hours, and that was during my first year in a tenure-track position. I had that "reduced" teaching load because I was also serving a one-year term as the interim chair of the department. Last semester, my teaching load was 11 hours. And I have done all of the grading in all of my courses—I've never had a graduate teaching assistant.

That isn't to say the research component of the job is easy. There are about 2600 four-year degree-granting postsecondary institutions in the US, but only about 150 of those are classified as R1 institutions (doctoral universities with "very high research activity") by the Carnegie Classification of Institutions of Higher Education. The academic positions at non-R1 schools, which make up the majority, will have reduced research expectations compared with academic positions at R1s, but they are still stringent. Such expectations include publishing at a certain rate and obtaining external funding.

To do the latter, you must convince an agency to fund projects that are based on research you have done—which may not be much if you have a high teaching load—using the equipment you hopefully already have. Keep in mind that if you aren't at an R1, your startup package as an experimentalist will not be $1 million, as is described on page 42 (again, I laughed out loud). A startup package of $40 000 would be much more typical. In my department, in order to have a successful grant application for any major equipment, my colleagues have needed to describe to the agencies how that equipment will be used in upper-level courses. In my experience, research gets done half as fast with undergraduates helping and twice as fast with graduate students helping—and the funding agencies know this too. Undergraduates might be on your team for only three years or less, so you'll be constantly building a new team of members with diverse academic backgrounds.

I am not writing because I am jealous of the hypothetical teaching schedule shown, and I am aware of the greater research requirements imposed on faculty at large PhD-granting universities. I have had my schedule because I love teaching and doing research with undergraduates. I definitely do not want to trade places with someone with the schedule on page 43, which is hopefully someone who loves doing research and interacting with graduate students. I hope that I have been preparing my students sufficiently so that you enjoy working with them as graduate students as much as I have loved working with them all these years. I am just suggesting that it would have been helpful to include a second, alternate version of the teaching schedule for an academic position in physics.

Joseph O. West
(joseph.west@indstate.edu)
Indiana State University
Terre Haute