

Memorandum

From: Michael Cavagnero, Dean of Science and Technology

To: Michael Parrish, Provost

Re: Impacts of Covid-19 on Research, Teaching and Service in the Division of S&T

Date: April 14, 2020

Faculty of the Division of Science and Technology at CSI have successfully transitioned all of their courses to distance learning format in compliance with the Governor's shelter in place order and the closure of our campus. They have also closed all campus research laboratories. All of the divisional faculty and staff have transitioned to telework. Campus access is limited to a few personnel who have brief and regulated visits to perform essential functions and/or to recover needed documents or materials. These changes are having a profound impact on faculty and staff of the division and will have both short-term and long-term impacts on our research, teaching and service missions. This memorandum provides a brief overview of our status, though circumstances are fluid and still far from equilibrium.

Operations

Departmental and divisional office staff continue to provide needed services to students, faculty and administrators despite the transition to telework. All of the normal business operations, including payroll and workload management, scheduling and enrollment tracking, accounting and financial management, etc., continue as required to meet associated deadlines. Staff report challenges and frustration with email communications, a poor substitute for the telephone when it comes to getting things done. The lack of access to shared drives and campus documents hindered staff for some time after the shutdown, though OIT is now enabling home-access to shared drives and Campus Security is permitting brief campus visits for document retrieval in many instances. Despite these challenges and obstacles, in addition to those posed by personal responsibilities for child and elder care, family illness, and other Covid-19 related stresses, the staff of the division are functioning admirably. They have been encouraged to take advantage of flexible work hours while being mindful of the limits of their contractual obligations to the College.

Instructional and Administrative Support

The transition to distance learning has required a temporary repurposing of many CLTs and CAs across the division.

CLTs have traditionally provided laboratory preparation and maintenance services, but are now contributing more directly to instruction. CLTs in the various departments have

- discovered and tested virtual laboratory and simulator resources available on the web,
- filmed lab segments for online use,
- provided write-ups and manuals for online laboratories,
- assisted instructors with IT needs,
- provided grading and tutoring services,
- served as moderators and aides in BB collaborate sessions, and

- served as general problem solvers to assist course instructors in fulfilling their responsibilities.

Department chairs report that CLTs have, speaking generally, been especially valuable in dealing with the myriad problems associated with the sudden shift to distance learning. They have also been required to attend training sessions to gain experience in diverse online platforms. There are reports of CLTs working especially long hours to attend to all of these responsibilities.

CAs have traditionally served to direct traffic within the division, directing phone callers and visitors to appropriate offices or officials. They have also provided essential office services to students, faculty and chairs, such as compiling reports, ordering textbooks, tracking grade-changes, helping with course scheduling, facilitating advising and registration, collecting faculty data, etc. The lack of direct phone service and foot traffic has significantly impaired CAs ability to perform some, but not all, of these duties. As time permits, CAs across the division have been assisting chairs and HEOs with other widely varying tasks. Some CAs in the division have joined the EDUCares team to track down students who are not participating in their courses.

Research and Graduate Education

The closing of campus research laboratories has badly affected many research efforts and threatened the timely completion of masters and doctoral degrees, simultaneously raising concerns about continued financial support and career trajectories for students nearing degree completion. If the campus reopens this summer, most research efforts will rebound without long-term impacts, but the effects of the delay on individual students may be significant and long lasting. For students pursuing theoretical or computational subjects, the impact of closing campus has been less severe, although all personnel may be struggling with personal and family issues associated with shelter in place and the healthcare crisis. Faculty who are teaching and mentoring online report high levels of graduate student engagement and participation. Funding agencies have issued guidelines for investigators that afford them greater flexibility in both the conduct of their research and their reporting requirements. Funded investigators should be reaching out to their agencies, seeking additional financial support for student researchers badly impacted by campus closure. It is not yet clear whether those agencies will have the financial resources to assist.

Upper Division Instruction

I have spoken with many faculty members across the division who are engaged in upper-division instruction for students majoring in their respective disciplines. All reported high levels of student engagement and participation and several noted a new appreciation for some aspects of online instruction. In particular, they cited the elimination of commuting time to campus, the ability to focus class-time on resolving barriers to student comprehension (by sharing student work with the class on Zoom, for example), and the flexibility of combining synchronous and asynchronous modes of instruction. These benefits contrast with an ongoing and overriding concern about the efficacy and security of online testing. Faculty eagerly await new and better tools for online testing. They fear that educational standards and student preparation will both suffer if these tools do not materialize soon.

Upper division instruction requiring laboratories has presented serious obstacles to faculty in the bench sciences. While advanced simulation/emulation software is available in some disciplines, most of these software packages were designed for lower-division instruction (think blocks sliding down inclined

planes), and they do not provide the real-world laboratory experiences that CSI normally affords its science and engineering majors. Faculty across physics, astronomy, chemistry and engineering have adapted these simulators/emulators where possible, but this endeavor should be viewed as a temporary solution that would normally run afoul of accreditors and will undoubtedly lessen the quality of instruction. This problem has been particularly vexing in biology, where the best one can often do is provide videos of laboratory activities where available. Plans to provide such videos for summer biology instruction this year are in development.

Our engineering department has developed a novel plan to provide inexpensive kits to its students for in-home hands-on laboratories for summer instruction. Issues associated with purchasing and distribution of the kits are under consideration.

Lower Division Instruction

The state of the division is less clear when it comes to lower division instruction. A surprising and notable dearth of complaints to coordinators and chairs may mean that the transition has been progressing smoothly. However, chairs have expressed the concern that adjuncts may not feel empowered to complain about the problems they are having. I held virtual town halls with a few groups of adjunct instructors, but attendance was small and the participants were probably among the most experienced adjuncts, so that I am not sure that the information conveyed is representative of the division as a whole.

Some insight into lower division instruction derives from systematic attendance records provided by the Biology department, which reports that, with 65% of adjuncts reporting, synchronous class attendance was 91% when averaged over all reporting biology courses. (Adjuncts not reporting may be running their classes asynchronously, so that other measures of participation are required.) These attendance levels are higher than experienced in on-campus instruction, presumably because many students are sheltering in place and are no longer working to support themselves. I do not yet know the extent to which this observation pertains to other departments in the division.

The apparent high level of participation appears in contrast to the experience of the EDUCares team, which reports large numbers of freshman and sophomore students facing obstacles to participation. Reconciling this information may require a more detailed analysis of the EDUCares program results, including a breakdown by department and program.

Laboratory instruction in the lower-division bench science courses is also challenging. Advanced software packages that realistically simulate/emulate laboratory environments for lower-division instruction are available in some disciplines and have been adopted and adapted in many courses, especially in physics, astronomy, chemistry and engineering. (Note that decades-old national investments in these simulators/emulators have produced fairly high-quality virtual platforms for laboratory simulation.) Our faculty are getting their first glimpse of this technology while trying to use it in their classrooms (on the fly). It will be interesting to learn how they assess the value of these packages after sustained use.

Laboratory instruction in lower-division biology courses and some chemistry courses remains a much more serious challenge to the distance-learning environment. Enabling faculty/staff to record videos of

biology/chemistry labs (while maintaining social distancing protocols) may be the best short-term solution, if access to campus facilities permits.

Remedial Instruction

Ensuring uniform instructional quality and consistent assessment is proving challenging in remedial math classes. The math department has cut the number of courses sharing common exams since their numerous adjunct instructors use different communication platforms, making common exams impractical.

Advising

Mathematics, Biology and Computer Science each have embedded advisors who have indicated that advising services are comparable to the pre-covid era. The most significant difficulties arise when two or three departments are involved, such as for transfer credit cases, as these require communications between advisors/departments and email communications slow down the process. The computer science advisor has adopted the Symplicity utility of the Career Center for flexibility in scheduling advising appointments, with good results. The math advisor has a long queue of non-majors, but that is par for the course and he is not complaining.

Biology has a hybrid advising system involving an embedded advisor, deputy chairs, and faculty for graduate students and MDT students: It seems to be working reasonably well, but only because of herculean efforts of the staff. The Biology advisor points out that the compressed advising schedule March 26th-April 5th left only 6 business days for fall advising. He also describes a rising number of courses for which registration is restricted, further complicating the work of advisors.

There is also general concern about the implications of the credit/no credit policy from CUNY. Advisors express concern that this policy may lead to students making decisions that restrict their professional development options upon graduation.

Faculty and chairs advise students in other departments, where similar problems undoubtedly exist, and without the benefit of professional embedded advising staff.

Service

Faculty and staff within the Division of Science & Technology continue to provide important services to the College, University, Borough, City, and State, as well as to their respective professional societies, despite the many setbacks associated with the pandemic and despite the needed focus on the transition to distance learning. Importantly, divisional faculty continue to contribute to shared governance through prominent roles on important committees, both at CSI and within CUNY, as these committees wrestle with unprecedented circumstances that challenge institutional norms and processes.

Divisional faculty and staff also continue to develop and secure pipelines for student recruitment, professional development and job placement. The CUNY-2x initiative to increase graduation rates and internships for tech-savvy students is running at full throttle, with two new lecturers, a new embedded advisor and a new campus manager in computer science. Three new collaboration agreements with the University of Buffalo will afford Staten Island students the opportunity to obtain doctoral degrees in pharmacy in as little as six years. Summer workshops, early college credit programs and other programs intended to integrate high school and college learning experiences continue, building on successful high

school workshops in our Biology Department. Notably, a new articulation agreement between CSI Engineering and Staten Island Technical High School is in its final stages, and the Computer Science department is considering a partnership with Port Richmond High School to form a new P-Tech early-college high school. Of course, high school workshops for the summer of 2020 will be cancelled or transitioned to online format. This is regrettable, as they are important contributions to education in the Borough and excellent recruiting activities for the College.

Infrastructure

Prior to the appearance of the coronavirus, the College had secured funding for several important initiatives to improve campus infrastructure in Science & Technology, including a new makers-space in engineering and a new genomics facility in biology. The pandemic will likely delay construction of these new facilities, but it is not yet clear how long the delays will be.

Special Mention

The Covid-19 pandemic has presented a special challenge to our Medical Laboratory Science program (aka. MedTech). Eleven of our students were in clinical rotations at area hospitals at the start of the pandemic. Only two have continued with their rotations without interruption. The others have suffered temporary suspensions of varying durations as dictated by each facilities safety requirements. These students are in great demand at area hospitals and they want to get back to work. The Program Director is hopeful that they will be able to complete their rotations safely and with only modest delays.

Conclusions

Upon hearing of the Governor's shelter in place order and the need to transition to distance learning, I anticipated severe damages to all of our instructional programs. The speed and efficiency with which college personnel responded to this challenge surprised me. The hard work of our instructional and office staff and faculty of all ranks has revealed that my worst fears were unfounded. College personnel have responded professionally and adapted quickly to the new reality. As regards the shift to distance learning, we have gone "from 0 to 60 in 2.7 seconds," rivaling Porsche.

Of greatest concern is the quality of the resultant educational experiences. Labs without real hands-on learning are not labs. Assessments made without standards are not true assessments. Faculty who cannot access their research labs have their entire careers at risk. Graduate students who cannot complete their experiments have their careers on hold. The sooner we can obtain even limited access to campus, albeit with stringent safety protocols, the better.

Reports that personnel across the Division are working longer than their contractually required hours, obtaining training, skills and experience beyond their job requirements, and filling in holes wherever they can find them are simultaneously admirable and concerning. I admire the esprit de corps and acknowledge that we would be in far worse shape without these efforts. However, if our circumstances do not soon return to normalcy, we shall have to find a new equilibrium in which we treat our human resources with the care and respect they so obviously deserve.