# MEGA Quality of Life Report 2016-2017



Prepared by the MEGA Executive Board April 28, 2017

#### **Executive Summary**

The Mechanical Engineering Graduate Association (MEGA) administered a quality of life survey during the two week period from March 20th, 2017 to April 3rd, 2017. MEGA received 108 responses from 50 Doctoral ME students, 42 Masters ME students, 1 Doctoral BME student, 3 Doctoral alumni and 12 Masters alumni. The responses represent 67% of current Doctoral ME students and 36% of current Masters ME students.

Based on the results of the survey and the MEGA executive board's discussion with ME faculty and staff on April 25th, 2017, MEGA submitted the table below as a list of official requests on behalf of the student body. The requests cover the highest priority and most widespread problems uncovered by the survey. MEGA is committed to correcting the problems below by September 1st, 2017.

Request	Description	Category
Improve communica- tion.	The department does not announce changes in faculty & staff positions. Very little notice is given for renovations, such as the MechTech Lab or ET 252.	Administration
AdoptColumbia'sconferencetravelpolicy.	The department does not follow Columbia's preferred policies to use p-card and travel agents to book travel.	Administration
Create a financial fact sheet for TAs, RAs, fellows, and graders.	Students are confused about how they are paid, the fees they must pay, and taxation of their income.	Administration
Expedite expense re- imbursements.	Students are waiting for 4-6 months to receive reimbursement checks, especially when they travel.	Administration
Expedite Quartzy orders.	30% of PhD students wait on average 8 days or longer after their PI approves Quartzy orders for the order to be placed.	Administration

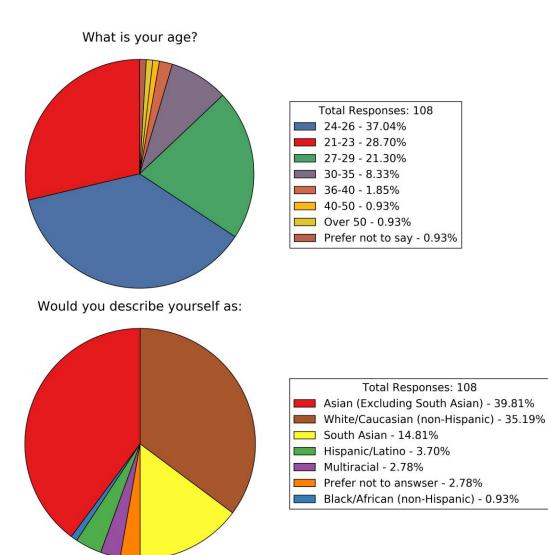
Request	Description	Category	
Maintain and clean the TA room.	The lock on the TA room door hasn't been fixed. The TA room is used by the general public. Markers don't always work.	Academics	
Improve availability of elective courses.	Students find it difficult to register for courses outside the ME department that are required for concentrations.	Academics	
Diversify seminars.	Seminars disproportionately feature work from the same one or two fields. Energy seminars should be restarted.	Academics	
Clarify recogni- tion of robotics concentration.	The department falsely advertises the robotics cencentration, as it is not for- mally recognized like the other concentra- tions.	Academics	
Improve MS student advising.	Many MS students have not met their fac- ulty advisors since orientation.	Academic Ad- vising	
Provide feedback and review of PhD students.	PhD students do not receive regular feed- back on their progress. The annual sur- veys that PhD students complete are not discussed by their PIs.	Academic Ad- vising	
Provide advisor in- formation on doc- toral offer letters.	Current offer letters do not include advisor information.	Academic Ad- vising	
Reinstitute TA awards and create other CV builders.	The department does not regularly give out the TA award and recognizes fewer students with awards than peer institu- tions.	Career Services	
Improve alumni rela- tions.	Alumni are not contacted by the depart- ment after graduation.	Alumni Rela- tions	
Update the website.	The website has out-of-date videos and false advertising of a robotics concentra- tion and also lacks clearly defined policies.	Technology Re- sources	
Assign staff member as Facilties point of contact.	Mechanical engineering spaces have in- complete facilities projects and are not regularly cleaned.	Facilties	

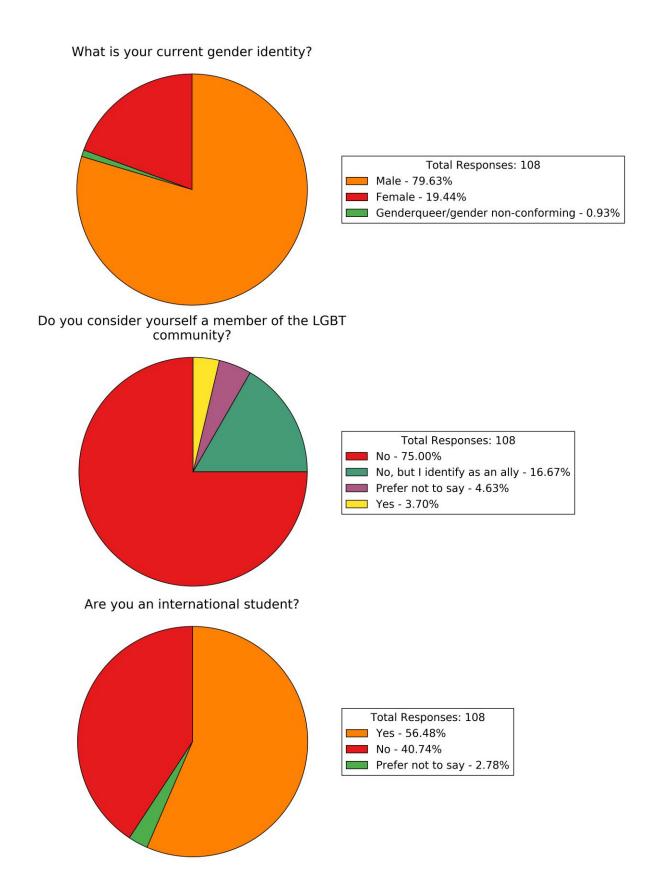
# Contents

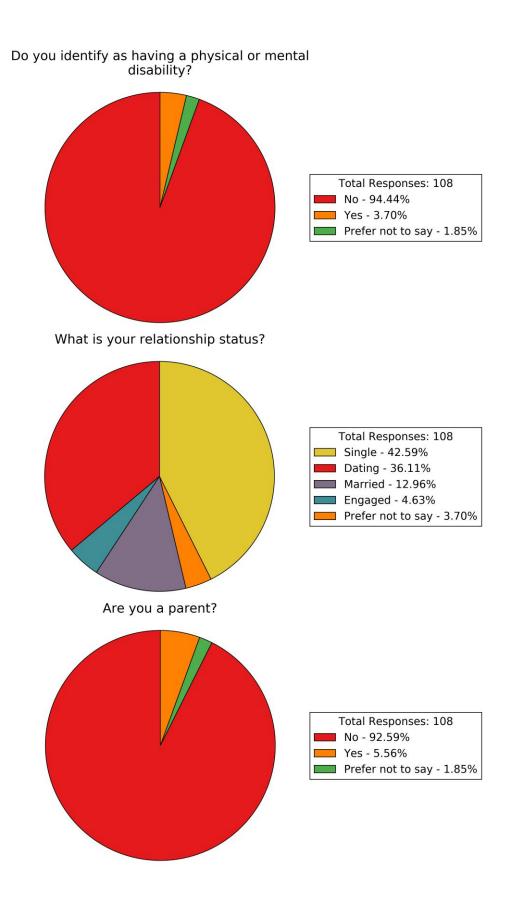
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## Section $\boldsymbol{1}$

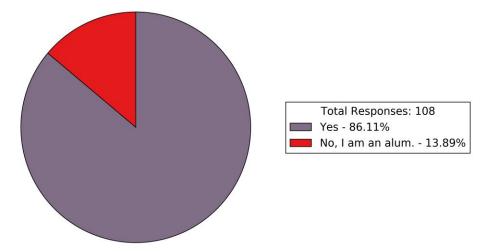
### Demographics





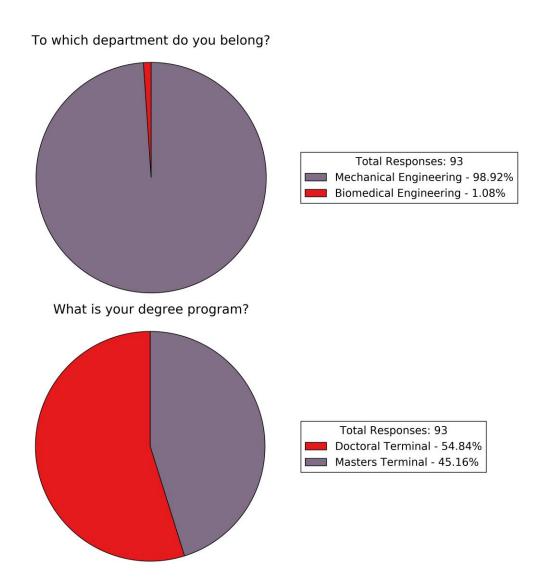


Are you a current student at Columbia?

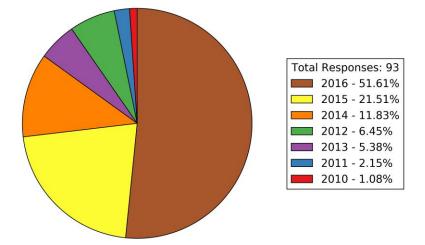


# Section $\mathbf{2}$

#### **Program Information**

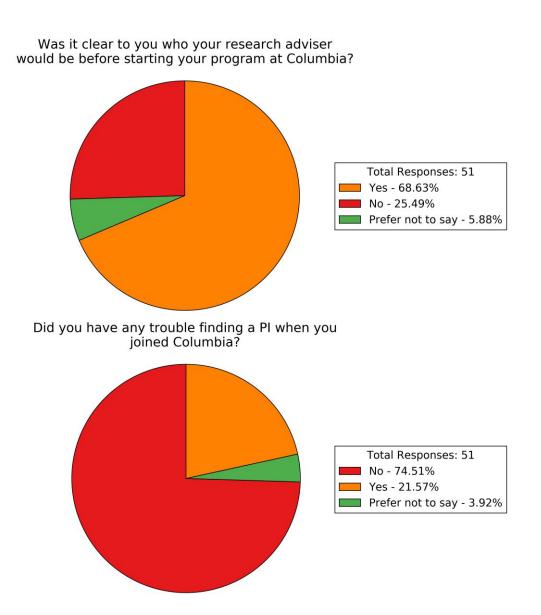


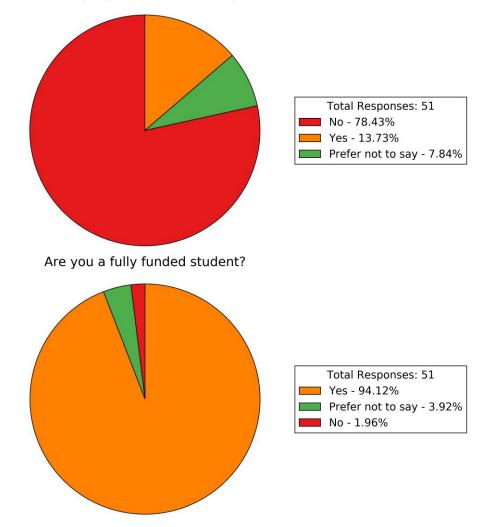
# In which year did you begin graduate study in Columbia's Mechanical Engineering program?



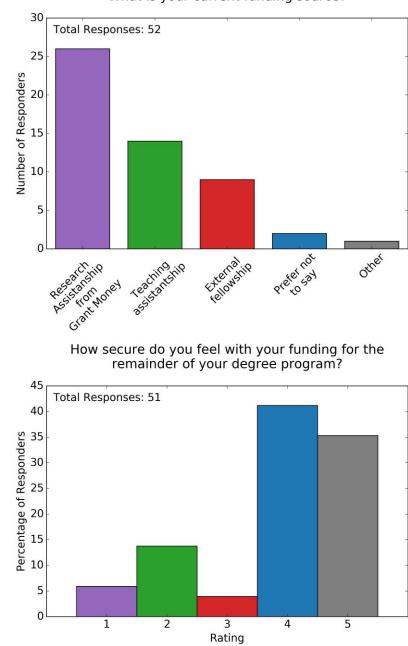
## Section $\boldsymbol{3}$

#### **Doctoral Specific Questions**

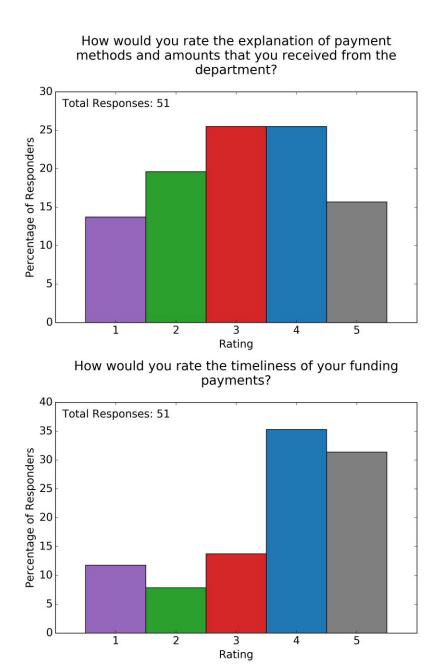


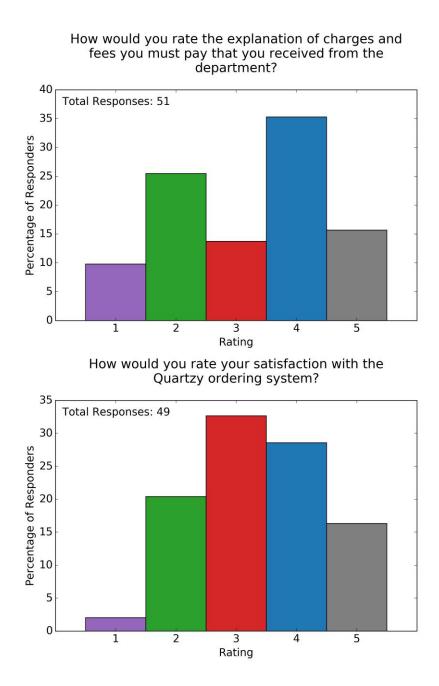


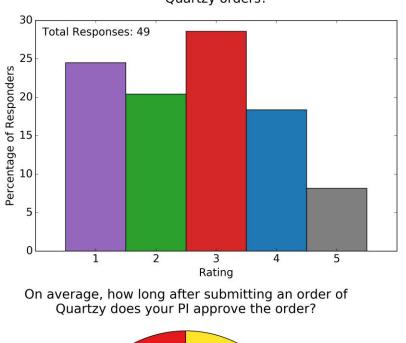
Have you changed your PI since joining Columbia?

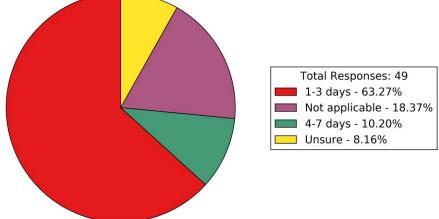


#### What is your current funding source?



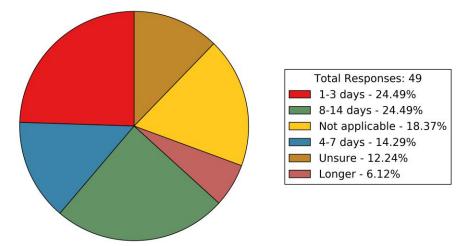






How would you rate the timeliness of processing Quartzy orders?

On average, how long after your PI approves a Quartzy order does the department place the order?



Summary of Facilities Issues in Research Laboratories (Room Numbers Suppressed):

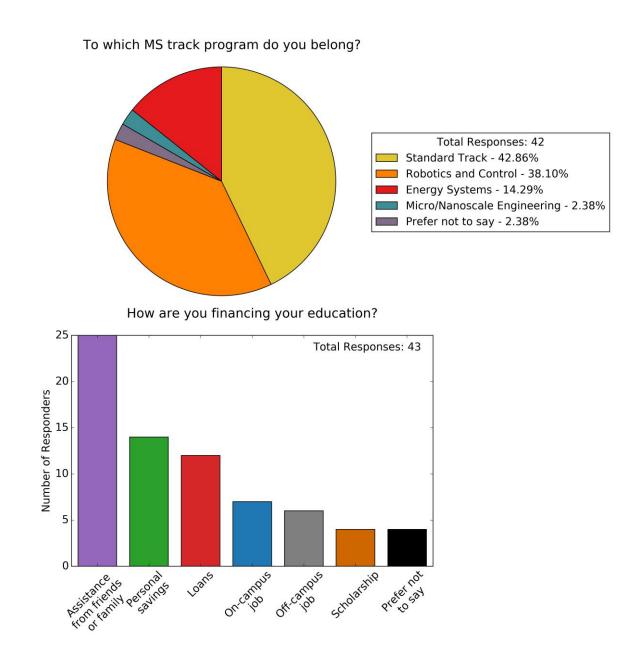
- HVAC— First floor is overheated (80-85°F) all winter. Other floors are too hot or too cold all year.
- Broken power outlets
- Broken ethernet ports
- No windows
- Floors are not regularly cleaned
- Leaking pipe in ceiling
- Broken lights and light switch
- Old, worn out asbestos floor tiles

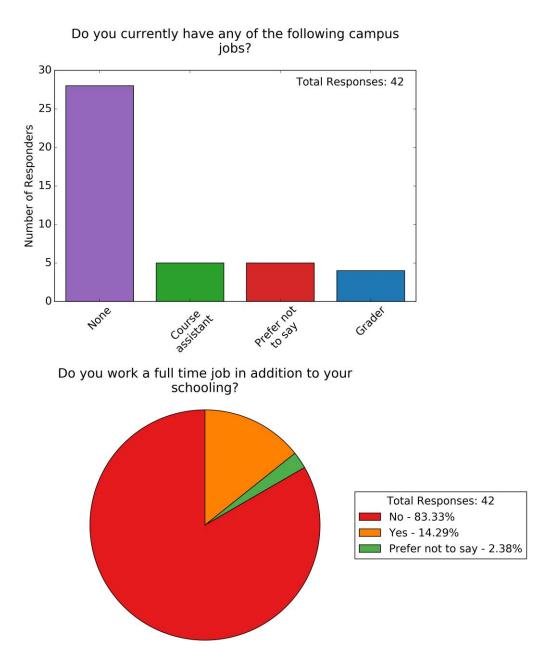
Summary of Comments on Quartzy Ordering System:

- Quartzy was a huge improvement over the old email ordering system, but still needs more work. Rules/policies about purchasing should be available through Quartzy.
- Processing and placing orders is extremely slow (2 weeks to place a cheap Amazon order), especially since Rakhi left.
- Chemicals are not always ordered correctly. Chemicals should be shipped to the Pupin loading dock to be entered into ChemTracker.
- Placing orders over \$5,000 is difficult. Extra approvals are required and there is no way for a student to track the order through the process. Update emails would be appreciated.

 $\operatorname{Section} 4$ 

#### **Masters Specific Questions**



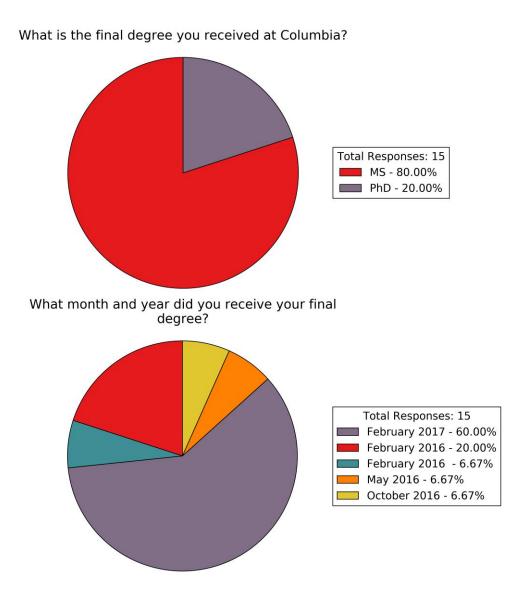


Summary of Ideas Expressed in Free Response:

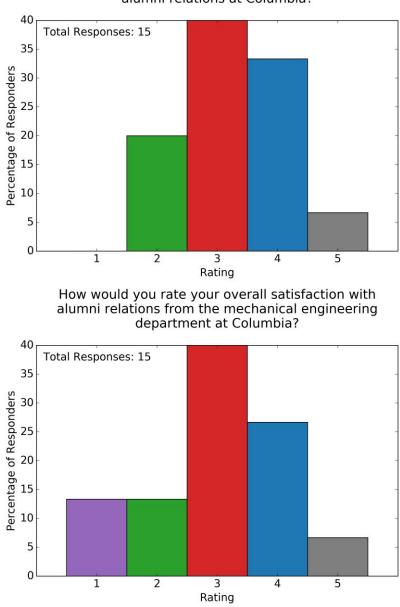
• The department should consider offering summer stipends to MS student would want to conduct research in ME labs. Other departments, such as BME, already provide this service.

Section  ${f 5}$ 

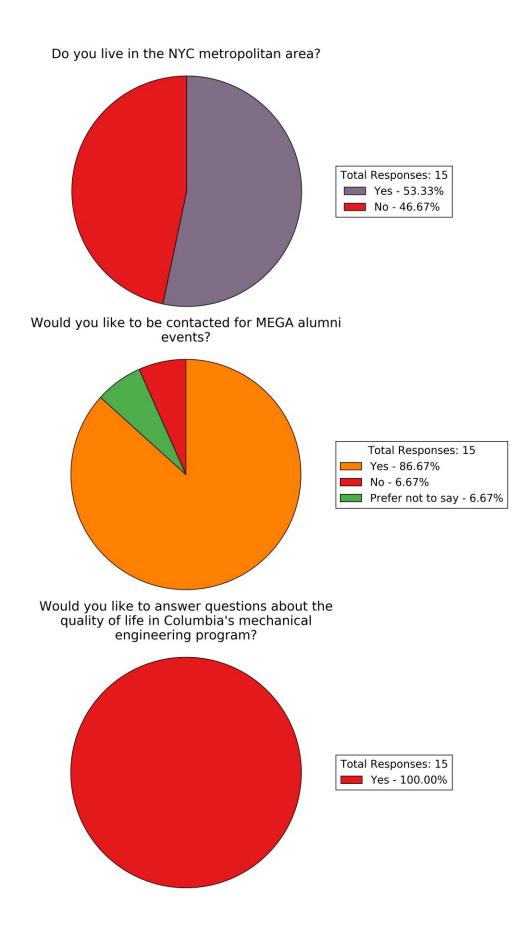
#### **Alumni Specific Questions**



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How would you rate your overall satisfaction with alumni relations at Columbia?

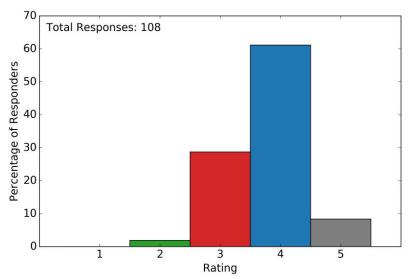


Summary of Ideas Expressed in Free Response:

- Alumni have not heard from the department since graduating.
- A LinkedIn and Facebook group for alumni should be created.
- The department should look into the feasibility of alumni events outside of NYC, or connect alumni to university-wide events outside the region.
- The department should continue to work with alumni to strengthen placements.
- Alumni-only events should be offered.

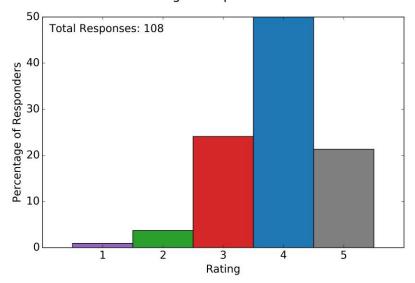
### Section ${f 6}$

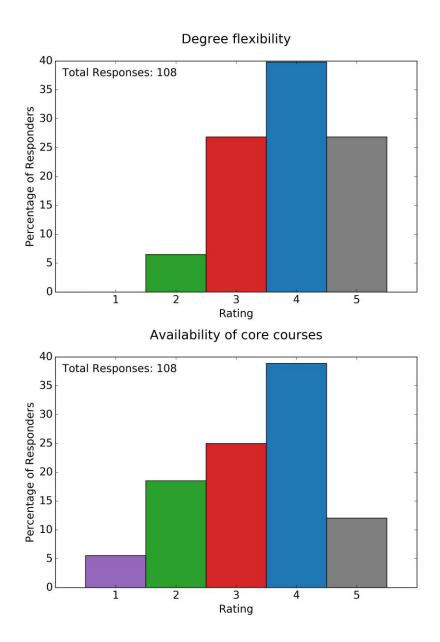
#### Academics



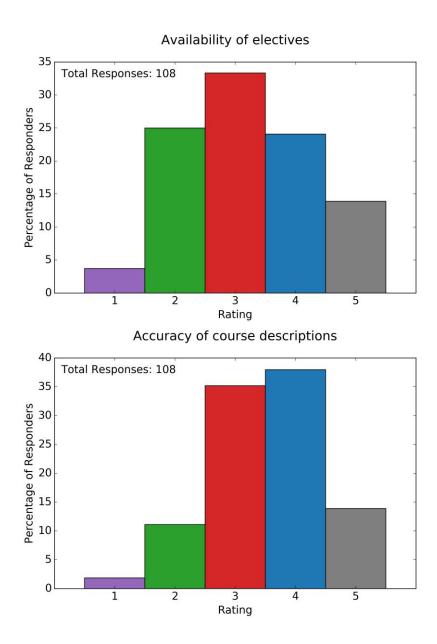
#### How would you rate your overall satisfaction with academics at Columbia?

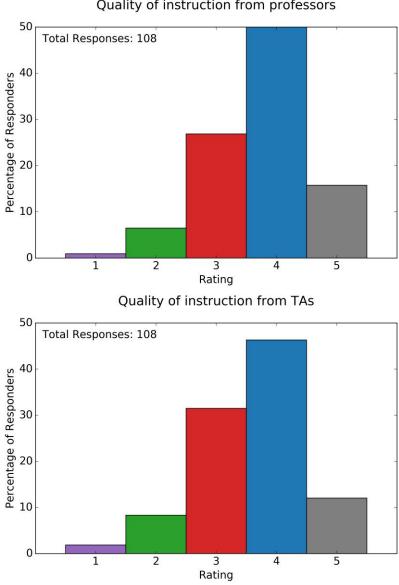
How would you rate your satisfaction with the following areas? Degree requirements



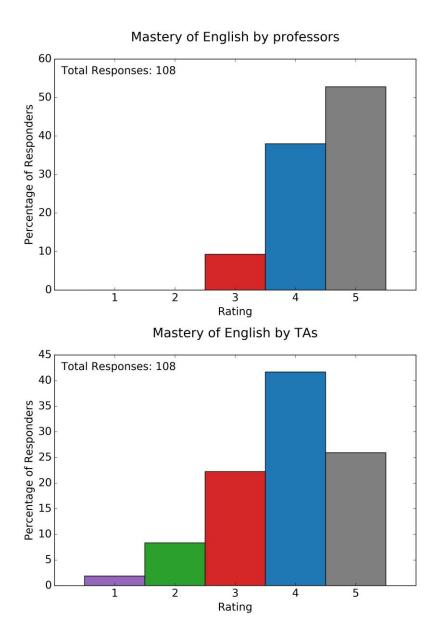


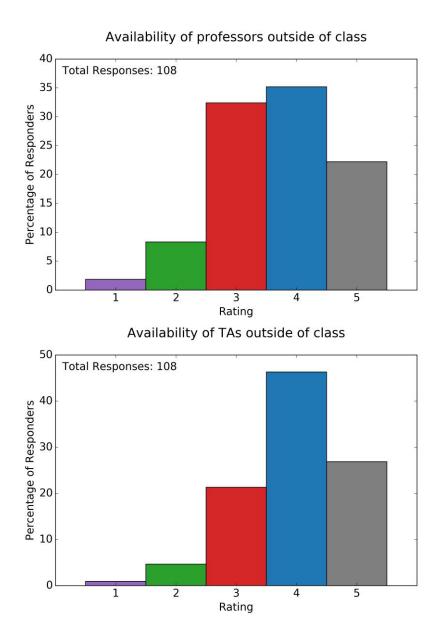
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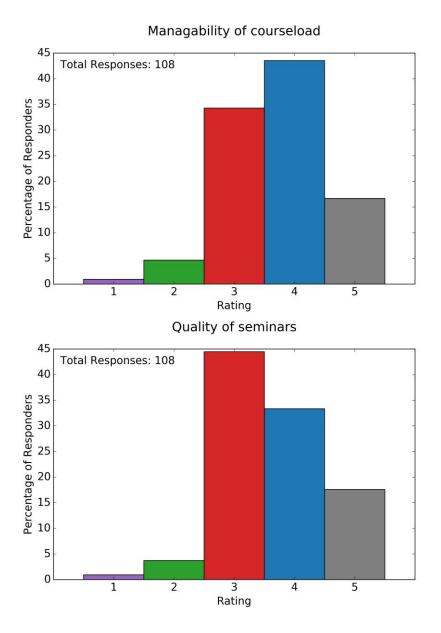




Quality of instruction from professors







Summary of Ideas Expressed in Free Response:

- It needs to be explicitly stated on the departmental website that the robotics concentration is not recognized by the university and does not show up on transcripts.
- More courses should have practical projects, maybe even group projects.
- More courses should be recorded and uploaded to CVN.
- The department should work with other departments to make it easier for ME students to get into non-ME courses, especially for robotics students.
- There are few courses offered earlier in the day.
- Professors who do not release homework solutions and course notes make it very difficult to study.
- The quality of some adjunct faculty is low.

- The energy track no longer offers Wednesday seminars. Energy seminars that pair with the business school or SIPA would be appreciated.
- Friday seminars disproportionately feature work from the field of the junior faculty member organizing them. Senior faculty should do a better job of suggesting speakers so there is a greater balance of topics.
- More courses should be offered (see below).

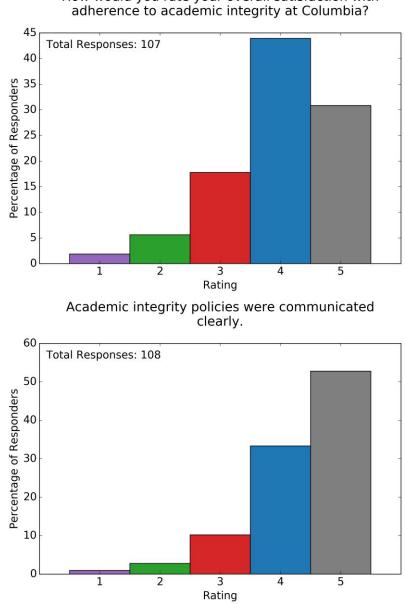
Desired Mechanical Engineering Courses:

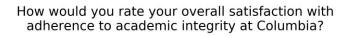
- Mathematics
  - Applied mathematics with a focus on engineering applications— topics from PDEs, complex analysis, and linear algebra (2 semester sequence)
  - Applied statistics with a focus on engineering applications
- Robotics & Control
  - Advanced controls— robust control, adaptive control, non-linear control, optimal control theory
  - Computer science robotics courses— machine learning, deep learning, data mining, computational robotics, computer vision, artifical intelligence
  - Mobile robotics
  - Humanoid robotics
  - Programming
  - Sensors and actuators
  - System identification
- Mechanics
  - Viscoelasticity
  - Plasticity
  - Damage
  - Non-linear mechanics
  - Biomechanics
  - Advanced finite element analysis
- Fluids
  - Advanced fluids with applied material
  - Fluid flow of plastics, composites, and liquid metals
- Design
  - Mechanism design
  - Product design
  - Reverse engineering and prototyping
- Energy
  - Energy efficiency
  - Energy policy and finance for engineers
  - Energy auditing and modeling
  - Battery and solar chemistry

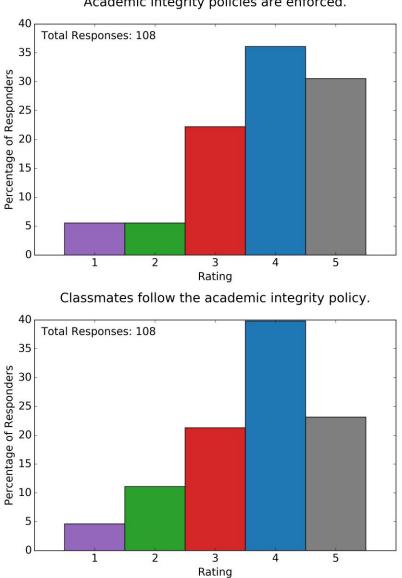
- Energy markets
- Other
  - Electromechanical systems
  - Advanced vibrations
  - Micro/nanoscale Engineering
  - Advanced manufacturing processes
  - Aerospace engineering
  - Automotive engineering
  - Advanced excel
  - Business

## SECTION 7

### **Academic Integrity**





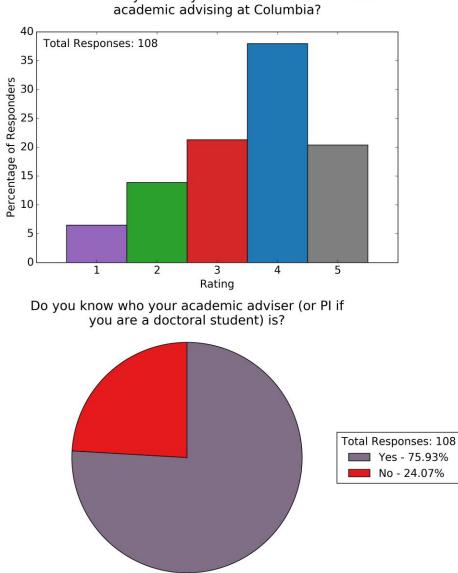


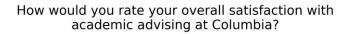
Academic integrity policies are enforced.

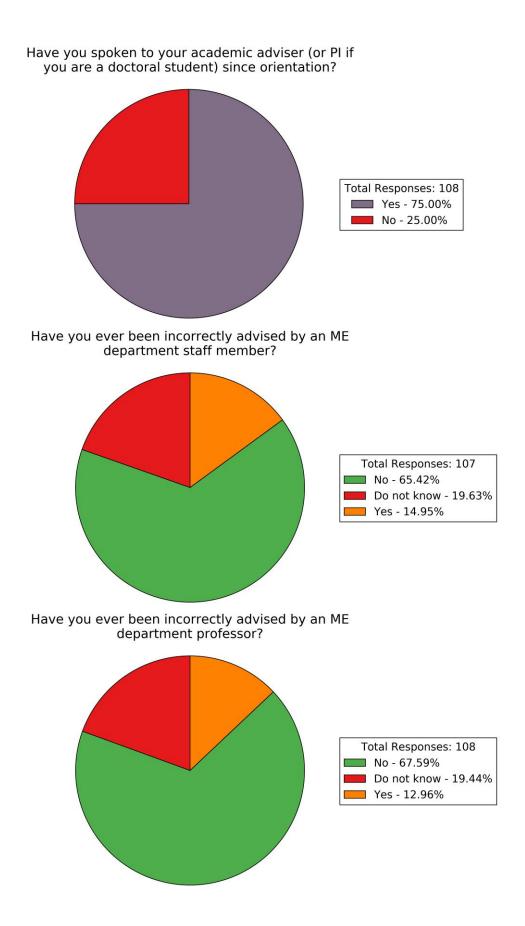
- The university should do more to make sure students comprehend the rules of academic integrity.
- Some students circulate old course projects, homeworks, and exams to younger students. When professors do not create new course material every year, those students who cheat have an advantage.
- Students have witnessed cheating during exams that goes unnoticed by instructors.

## SECTION 8

## **Academic Advising**



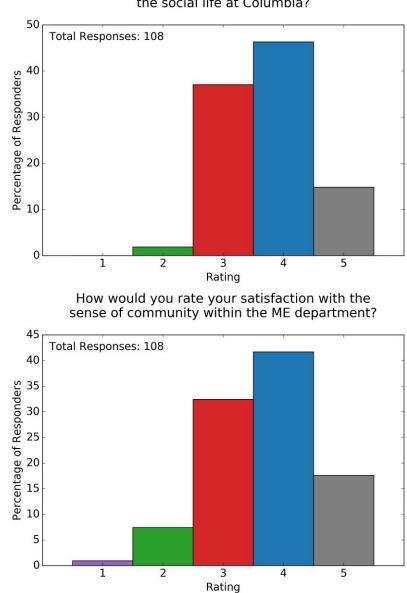




- Faculty and staff give unclear and conflicting descriptions of program requirements. Not all faculty advisors seem to know the rules.
- Faculty advisors should be more careful when advising on courseload. Five classes per semester or four classes and one research credit is too heavy for many first semester students.
- Advisors were not available for 1-on-1 meetings with students. The meetings students do have with advisors were rushed and lacked discussion of course selection.
- Degree requirements for 6000 level courses for the MS degree were miscommunicated.
- A mentoring system for new students to talk to current students would be helpful.
- Doctoral degree requirements are vague or omitted from the departmental website.
- Third semester doctoral students should be re-advised about course requirements after completing their MS degrees.
- Doctoral students do not receive regular, manadated feedback on their progress. They complete annual surveys of progress but the results are never discussed between the PI and the student.

## Section $\boldsymbol{9}$

#### Social Life



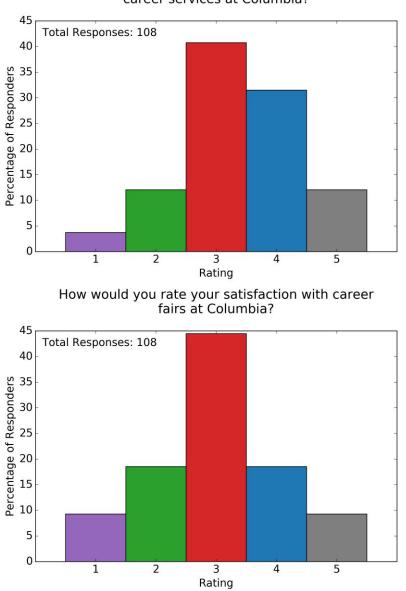
## How would you rate your overall satisfaction with the social life at Columbia?

Summary of Ideas Expressed in Free Response:

• Students are generally pleased with MEGA's monthly socials.

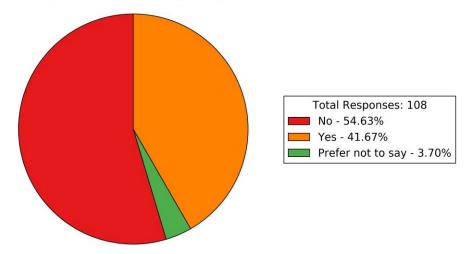
- There should be more social events outside the monthly socials, perhaps events off campus.
- Students would like to see more cross-departmental and inter-school social events.

#### **Career Services**



#### How would you rate your overall satisfaction with career services at Columbia?

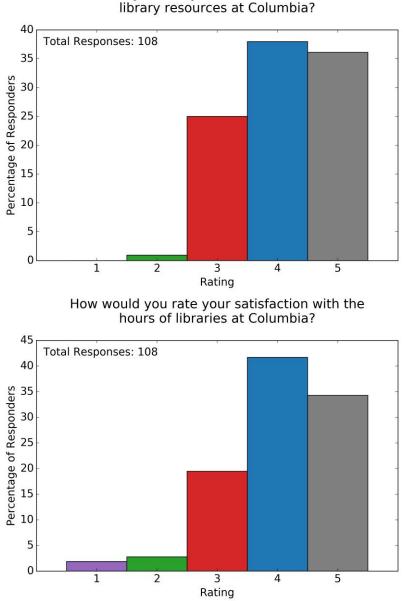
Are you currently looking for a job?



- The Center for Career Education does not cater to the needs to mechanical engineering students. Career fairs lack companies looking for mechanical engineers, especially those in robotics or renewables. There is a focus on banking/finance and computer science. The mechanical engineering companies that do come to the career fair often do not hire international students.
- Columbia should try to recruit more companies from outside the area to our career fairs, since many mechanical engineering companies are not located within the NYC metropolitan area.
- The department should better partner with industry partners to bring companies to campus to give talks and engage with current students.
- It would be great to have statistics on MS alumni employment (companies/industries for at least the last 5 class years) and also for PhD alumni.

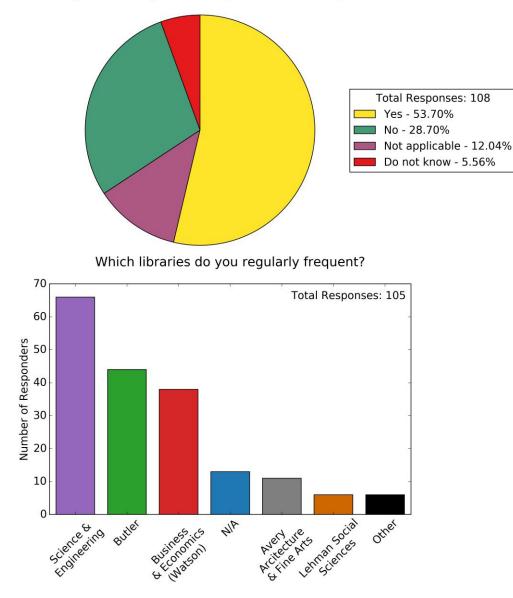
## SECTION 11

#### Library Resources



# How would you rate your overall satisfaction with library resources at Columbia?

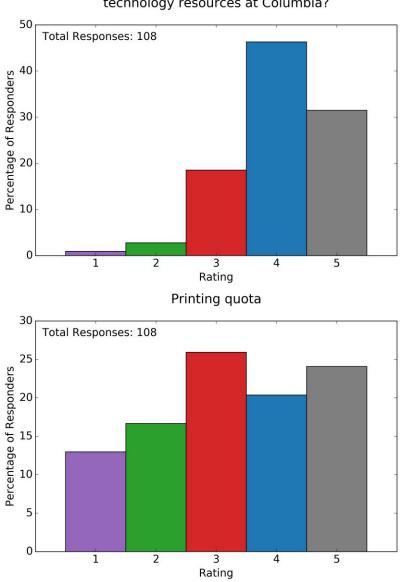
Are you normally able find space in the library?



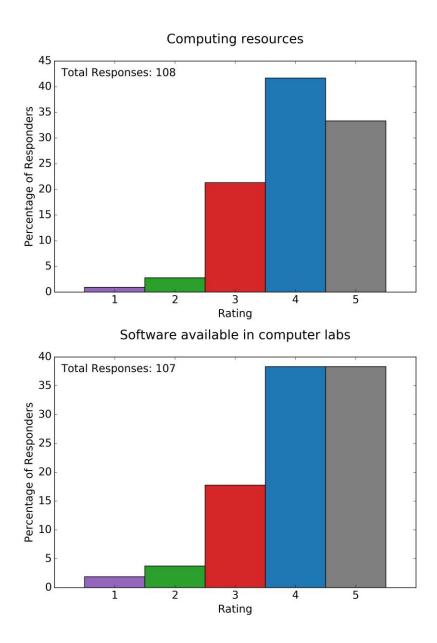
- There is insufficient library space, especially where food or speaking is allowed.
- Non-science/engineering and non-students crowd out science and engineering students from the Science & Engineering Library.
- People camp out in the libraries and take space, even when there aren't actually using the space.
- Not enough libraries stay open late.
- More items (camera, microphones, drawing pads, etc.) should be available to borrow from the libray to facilitate student projects and presentations.
- More hardcopy books should be available.
- Student should have access to papers on scientific.net.

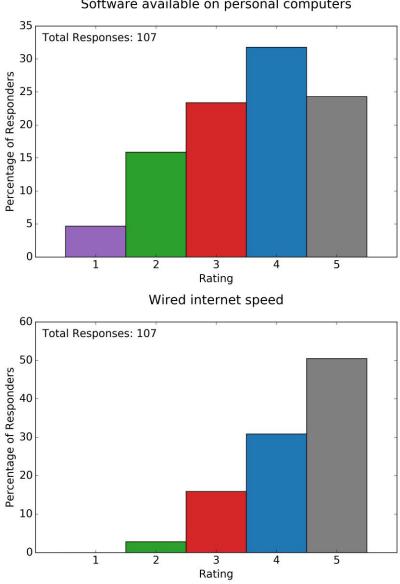
- The drinking fountain in the Science and Engineering Library has been broken for a long time.
- The Engineering Library in Mudd is still missed by older students.

#### **Technology Resources**

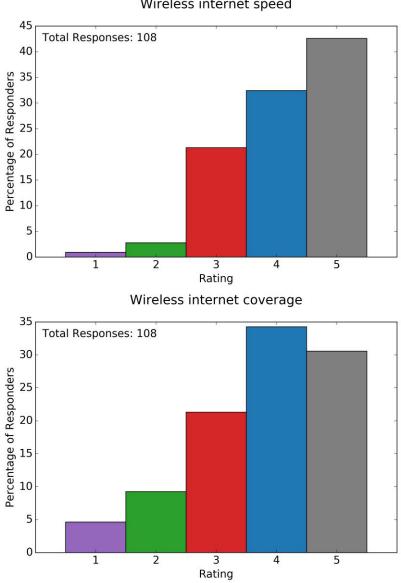


# How would you rate your overall satisfaction with technology resources at Columbia?

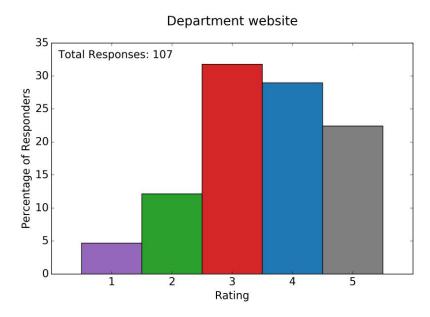




Software available on personal computers

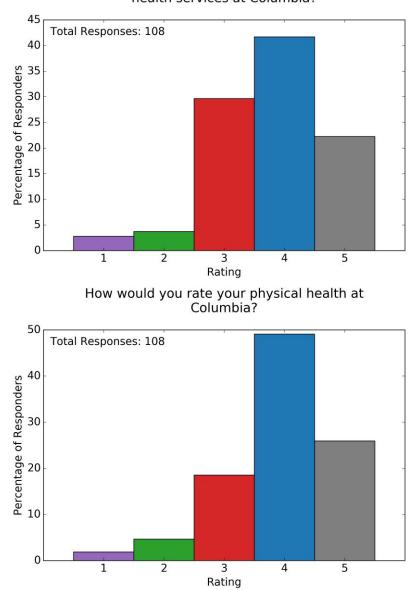


## Wireless internet speed

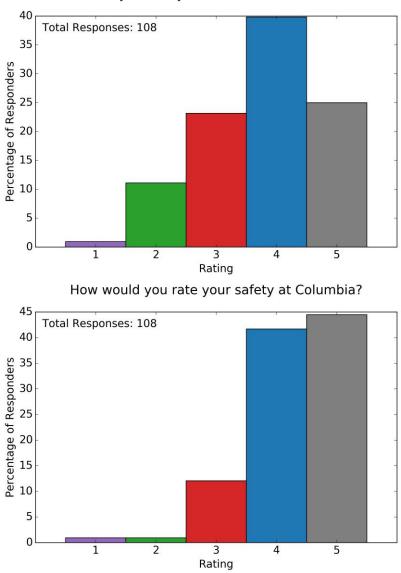


- WiFi coverage is spotty in Mudd. The first floor laboratory spaces and 214 Mudd are particularly bad.
- Printing quotas are too low. Every group with a printing quota, except regular graduate students, receives \$10 per week. Graduate students receive \$2 per week, unless they are student officers (most TAs and RAs). A semesterly quota like the undergraduates have would also be helpful.
- Doctoral students on fellowship are not classified as student officers, so they receive \$2 per week instead of the \$10 per week all other research assistants receive.
- There is little to no IT help available to laboratories. Cross-departmental IT staff would be helpful.
- A Columbia VPN should exist so students may access academic journals off campus.
- There are only two color printers on campus— in Lehman Social Sciences Library and Butler Library.
- More software should be available for use on personal computers.
- The university should have maintained a PTC Creo license after switching to Solidworks.
- The department's website is out of date. Many of the videos are over 7 years old and the seminar schedule is not updated regularly.
- Degree requirments on the department's website are often incorrect or contradict the information students are given by staff. The website also lacks sufficient detail about program requirements, so students must ask staff follow-up questions.

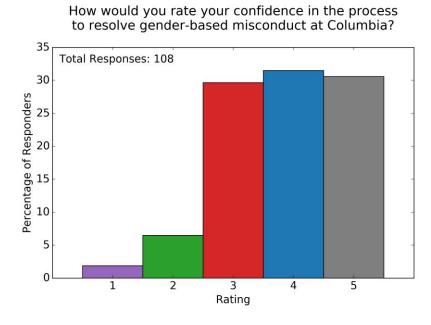
#### **Health Services**



#### How would you rate your overall satisfaction with health services at Columbia?

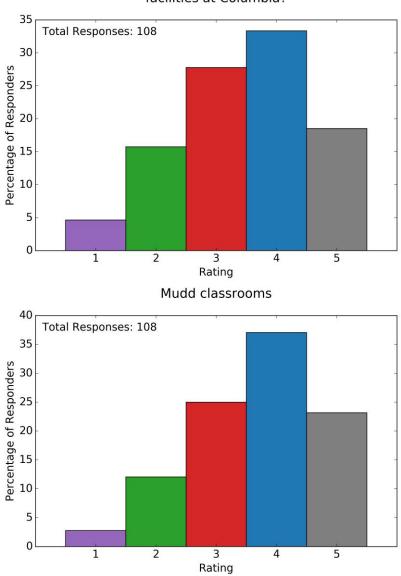


How would you rate your mental health at Columbia?

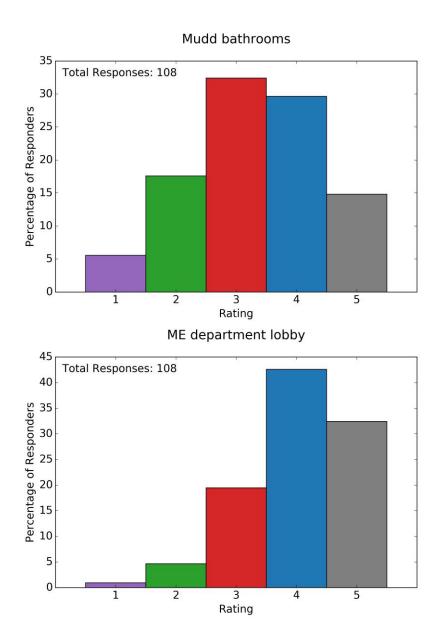


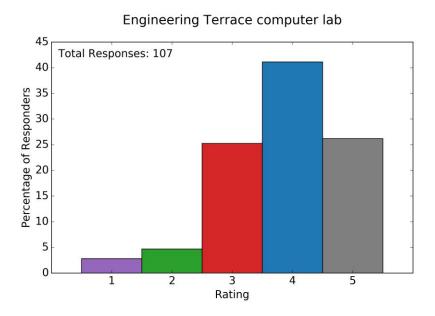
- Dodge Fitness Center is small and overcrowded.
- Drop-in counseling hours are a great resource, especially at night.
- Scheduling routine care at Columbia Health is frustrating and difficult.
- Understanding student health plans is difficult. The presentation given by Graduate Student Affairs was unclear.
- Changes to student helath plans are not well communicated.
- Dental care is insufficient.
- There are sometimes non-students in Mudd at night and on weekends. This is a safety concern.

## Facilities



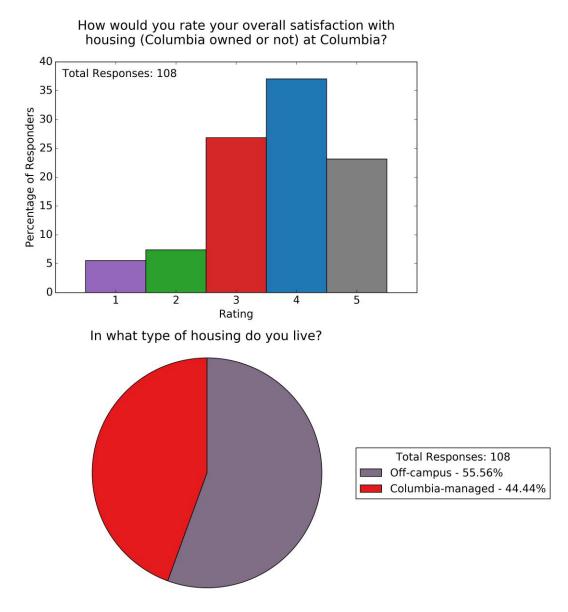
## How would you rate your overall satisfaction with facilities at Columbia?

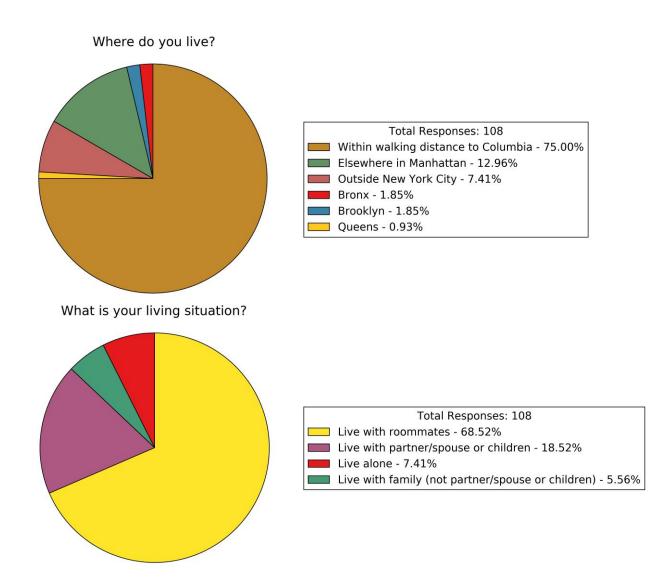




- Classrooms, hallways, bathrooms, and labs all need new coats of paint.
- Classroom chairs are uncomfortable.
- Classrooms are not stadium seating, which makes it difficult to see.
- First floor drinking fountain was removed and never replaced.
- Second floor drinking fountain is often broken or has a very slow flow rate.
- Tables on first and second floor and in Carleton Commons are wobbly.
- There is a large hole in the ceiling outside Carleton Laboratory.
- Facilties started but never completed repainting the lab doors on the first floor.
- Facilities installed whiteboards on every floor of Mudd but the first floor.
- Every research lab does not have a dedicated bulletin board for research posters.
- First floor hallway does not get cleaned regulary, and is often very dusty.
- ET 251 computer lab needs to be cleaned more thoroughly, including disinfecting keyboards and mice.
- HVAC in ET 251 computer lab is very loud and makes the room too cold. Vents also blow directly onto the printers and blow papers away.
- Bathroom garbage cans overflow often.
- There is no female bathroom option on the first floor and few gender-neutral options. There's also no sign directing women to the nearest bathroom.

## Housing

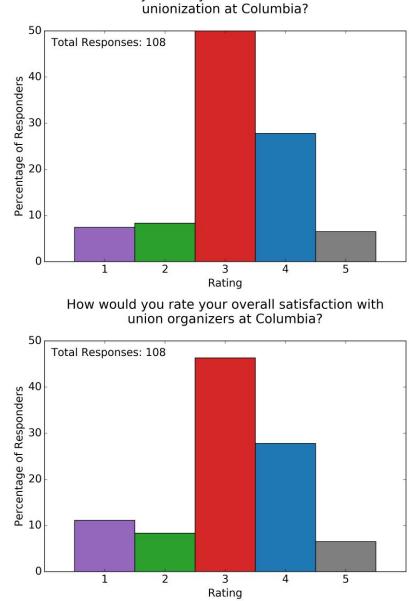




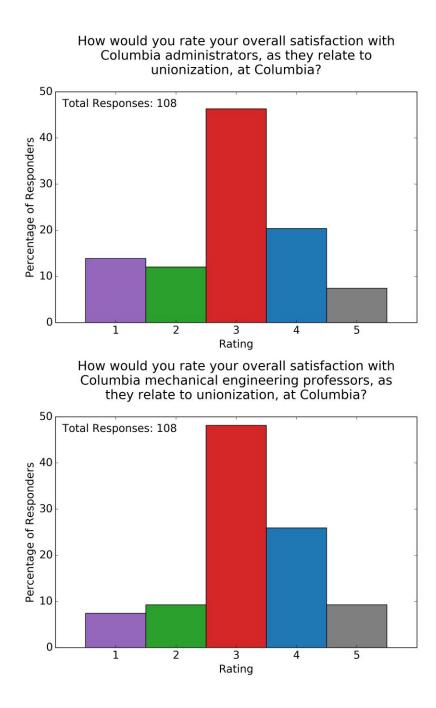
- It is difficult to find information on the University Apartment Housing (UAH) website. In person however, the staff are friendly and helpful.
- UAH does not respect the preferences given in the application when making housing assignments.
- UAH gives little time to accept housing assignments.
- The "take-it-or-leave-it" policy for UAH apartments restricts graduate student choice; more freedom should be given to select apartments and roommates.
- Students who do not receive UAH are not given enough support looking for alternative housing. In particular, international students are directed to brokers with whom it is difficult to negitiate.
- The expected wait times for UAH should be more clear.
- UAH rents and stipends should be tied together; UAH rent is too high, even in NYC.
- Having repairs done in UAH is too slow.

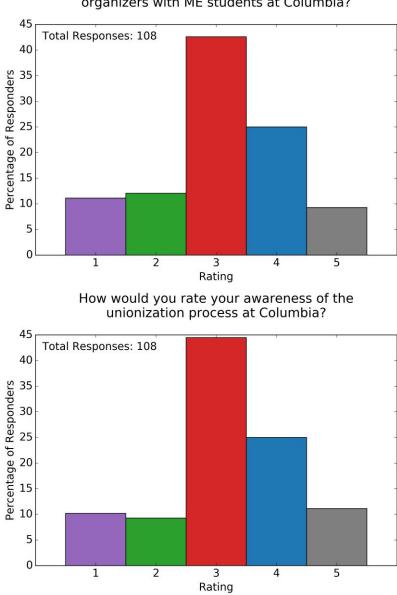
• There are insufficient laundry machines in UAH apartments.

#### Unionization

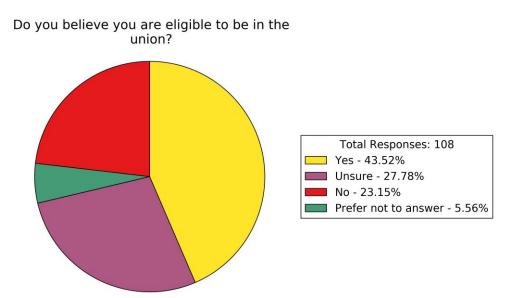


## How would you rate your overall satisfaction with unionization at Columbia?

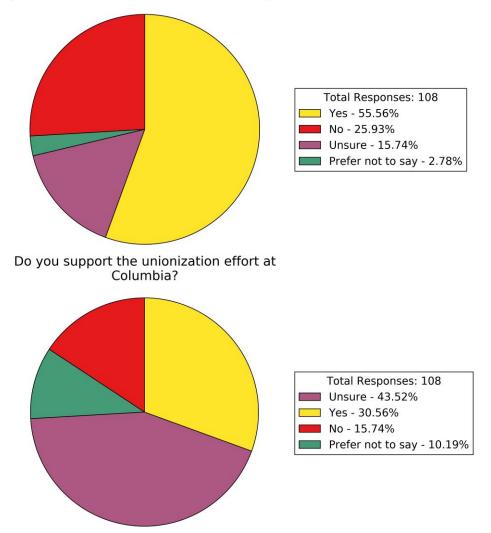




How would you rate the communication of union organizers with ME students at Columbia?

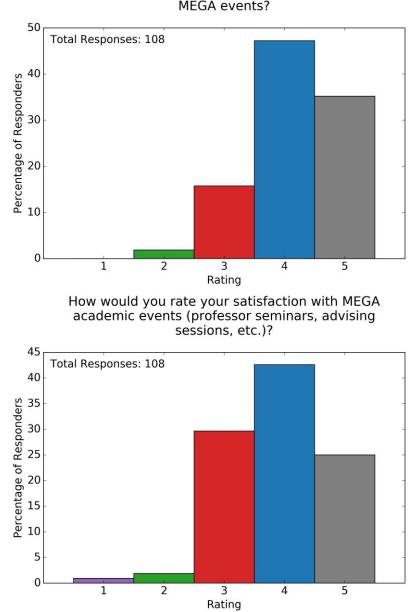


Do you receive email from the union mailing list?

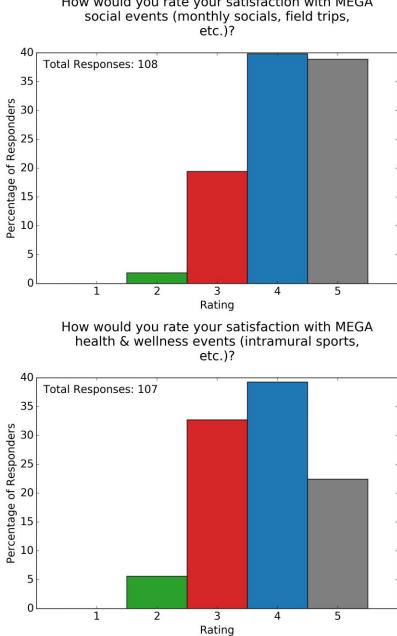


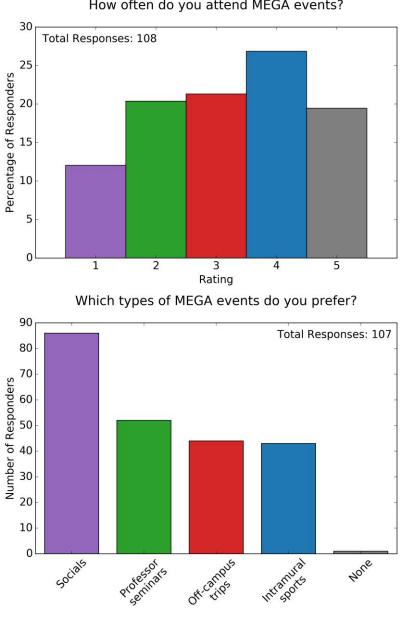
- Some students feel indifference or opposition to the union. Opposition stems from viewing it as unnecessary.
- Union organizers need to better communicate with graduate students.
- Student organizers contacted students inappropriately before major votes.
- The university did not make a good faith effort to facilitiate discussions on the merits of unionization.
- Some mechanical engineering professors mishandled unionization by not maintaining neutrality and being dissmissive of students' reasons for supporting concerns.
- Students were concerned about backlash from their PIs for publically supporting the union.

### **MEGA Events**

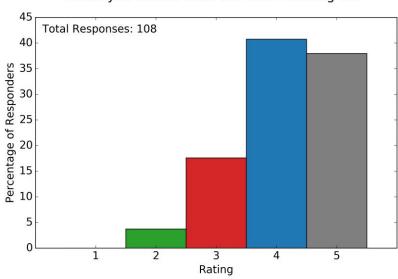


#### How would you rate your overall satisfaction with MEGA events?





How often do you attend MEGA events?



How would you rate your satisfaction with the email you receive from the MEGA mailing list?

#### Free Response

Comments Not Covered By Previous Sections:

- Reimbursements
  - Personal reimbursements are very slow. For doctoral students attending conferences, the normal procedure is for students to pay for flights, hotel rooms, conference registration, and meals and then be reimbursed after the conference. Student cannot afford to pay thousands of dollars and then wait several months to get their money back.
  - Other departments have travel agents who can book flights and hotels and allow students to pay conference registration fees using a departmental p-card. The Travel and Business Expense Information website explicitly says these methods are preferable to how the mechanical engineering department handles the expenses.
- Research Labs
  - The state of some research labs is embarrassing and negatively impacts the department's ability to recruit the best graduate students. PIs are unwilling to spend their funds on aesthetic upgrades so the department should step-in to make changes. Research labs should have the option of having the walls repainted at some regular interval of time, maybe every 5 years. All mechanical engineering lab spaces should be given matching placards with the lab name and room number. Keypad doors would encourage more MS students to get involved in research without having to make more keys.
  - The department should encourage an atmosphere of lab safety. Last year, the department organized a trip to the FDNY headquarters in Brooklyn for C-14 training. This year, no one took the initiative to organize the same trip. That is limiting to MS students and young PhD student who cannot be in lab without a C-14 holder present. The department should also work with Environmental Health & Safety to organize a chemical lab safety training, as that is a requirement for every student who works in a research lab; some current students working in labs do not have that training. The department should also provide greater refrigerator space for students in chemical labs to store their lunches.
- Space

- The ET 251 computer lab is overcrowded, especially since half of it was converted to the MechTech Lab. The department should more heavily advertise the computing resources in ET 252 since many students are unaware of them.
- As the department expands, many spaces are being converted to lab and office spaces. The only public space for mechanical engineering students is the lobby, with only two couches. A general room shared by everyone from the department is needed, perhaps in the TA room, the room by the coffee machine, or the old mechatronics lab.
- Communication
  - The department suffers from an overall lack of transparency. Students have a right to know the budget of the department and the plans the faculty have for the department.
  - There are no announcements made when faculty or staff join or leave the department.
  - The department relies on PIs to communicate information to students working in their labs about issues impacting labs. But the emails requesting they forward that information often die in PIs' inboxes. A system of lab contacts would help alleviate that problem.
  - It's difficult to find rules/regulations/policies posted publically. Policies should be clearly stated on the departmental website, such as post-quals travel funding, guaranteed funding for those in "good academic standing," stipend rates, and full time status after completion of the MS degree, to name a few.
- TA Room
  - The TA room should be maintained at a higher standard. The lock has been broken for several months and non-ME people congregate in the room when the door is not closed. The desks and chairs should be more comfortable— the furniture looks like leftovers from other labs. Markers and erasers should be regularly stocked. The TA schedule should be posted by the door.
  - The room isn't used for a large percentage of the day. Graduate students should be able to access it as a "lounge." A fridge and microwave could be added to the space for doctoral students in chemcial labs who cannot store their lunches anywhere.
- Professional Development
  - The Great Presentations and Academic Writing courses offered to doctoral students are highly appreciated.
  - The TA award hasn't been given out since 2013. The award should be restarted and other awards should be created— standard practice for many other universities and departments. Student awards help morale and boost CVs.
- Staff

- The department appears to be understaffed in the office area.
- The staff turnover rate is very high.
- Specific complaints about staff members are not included in this document, and will be addressed privately.

Suggestions to Improve Survey:

- "Not applicable" option
- Progress bar
- Better branding so alumni know they may participate
- Change core and elective courses to 6000-level and 4000-level courses
- Questions regarding...
  - Communication of degree requirements
  - Quality of the gym
  - Political stances taken by the university
  - Best day/time for MEGA events
  - Use of MEGA mailing list to advertise other clubs' events
  - Food insecurity