

**Program Review & Planning
Request for Contract Classified Position
2018-19**

Please upload and submit this completed form through the SurveyMonkey program review module.

This is a joint request for **Physics, Astronomy, Engineering, and Earth Science.**

Department	Math, Science, and Engineering		
Position Title	Physical and Natural Sciences Technician (Physics, Astronomy, Earth Science, and Engineering)		
Salary Range	\$40,380- \$50,600	Annual Salary at Step B*	\$42,700
Hours/week and # of months	40 hours/week, 10 months		

*For job Range and Salary information, see: <http://www.gcccd.edu/human-resources/salary-schedules.html>

1) Provide the following information for the **new position or the increase in FTE for an existing position** that is being requested, or for the request to fill a vacant, frozen or defunded position:

Position classification and number: **Science Lab Technician III CL-36**

Proposed FTE: 1.0

Contract type:

- 10-month
- 11-month
- **12-month**
- Seasonal (specify):

What type of position is being requested?

- **New general fund position**
- Replacement for a funded position
- Replacement for an unfunded position
- Position currently funded by grant funds
- Increase in the FTE for the position

Please attach the description for the position classification (contact GCCCD Human Resources to obtain this).

Last year when HR was contacted they did not have one. I dug one up and will request again for them to find one without much hope that they will.

What are the actual duties and responsibilities that are specific to this requested position? (100 words or less)

Perform a variety of responsible, skilled, specialized and technical duties related to the organization, coordination and operation of physics, astronomy, engineering and physical science laboratories. Interpret circuit schematics and perform repairs on sophisticated electronic equipment such as oscilloscopes, oscillators, generators, power supplies, Geiger counters, multimeters, lasers, microwave equipment, telescopes, solar filters and a variety of eyepieces. Maintain and audio-visual equipment. Dry mount and heat press charts and diagrams.

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- Coordinating general laboratory operations.
- Support of instructors: setting up and taking down equipment, assisting in labs and demonstrations, training faculty on specialized equipment, managing budgets and lab curriculum, keeping supplies in stock.
- Equipment purchasing, organization, maintenance, and repair (or managing outside repairs)
- Operate a wide variety of specialized equipment including telescopes, lasers, testing and measurement devices, chemical instruments, microscopes, audio-visual and other electronic, electrical and mechanical devices. Troubleshoots processes and makes recommendations or alters protocols to improve procedures.
- Coordinate and lead research projects where appropriate

2) Is the position being requested in order to comply with state or federal mandates/requirements? **(Rubric Criterion 1)**

Yes

Cite the specific mandate/requirement (100 words or less):

No

3. How are the duties of the requested position currently being performed, if at all? (200 words or less) **(Rubric Criteria 1)**

Currently, we have one technician covering 22 labs and 29 lecture sections across six disciplines supporting over 830 students and 15-20 faculty members. (Table shows comparison to other lab disciplines.)

	Full-Time Lab Tech.	Part-Time Lab Tech.	Substitute Lab Tech	2016-18 Avg. FTES	2017/2018 Avg. FTEF
PHYC/ENG/ASTR/ GEOG/GEOL/OCEA	1	0	0	136	8.5
BIO	2	0	1	198	10
CHEM	2	1	0	94	6

How does the lack of this position impact the program or service area

- **Lack of a first shift technician to support daytime labs disproportionately hurts disadvantaged students** (all physics and earth science labs are currently scheduled between 2:00 - 10:00 PM)
 - *Students with children or other dependent family members*
Most daycares close at 5-6pm, after hours care can be prohibitively expensive
 - *Students who work second shift* are not supported if their major requires physics and earth sciences labs
 - *Students who rely on public transportation or carpooling* may be affected by large gaps between early morning lectures and afternoon labs held on the same day

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- **Engineering does not have a technician to support engineering labs and the department**
 - Students and faculty currently set-up and take-down labs meaning instruction time is delayed, shortened, and/or runs over. This affects course scheduling, the ability of students to get to their next class on time, and liability when students have to set-up and take-down heavy equipment.
 - The second shift physical & natural science technician and the second shift microbiology technician have assisted in setting up 210 labs during 2016, and will continue to do so in the absence of a technician to support engineering labs. The support provided at night is limited, and in addition to primary support duties.
 - Engineering 210 is during the morning and so has no technician present
- **Potential loss of only technician carrying extensive specialized knowledge**

Our current technician knows everything for six disciplines. No one else does. A previous lab technician left for a substantial raise and lighter workload. This could easily happen again.
- **Lab turnaround and in-class demonstration set-up/take-down impacts faculty interaction with students**

Our courses are very tightly scheduled and there are 4 labs at different locations on the campus. A second technician with overlap during the busiest lab times could ensure fast, smooth turnaround. In addition, we know that faculty contact time with students is one of the most important ingredients for student success and one of the major support systems within the entire guided pathways concept (major college goal). We have mostly part time faculty who work regular jobs during the day, or who are working at multiple colleges and are barely making it from one place to the next, if they have to spend their time setting up equipment when they arrive for their class, that takes time away from their ability to interact with students. It would be more effective from the perspective of student success and retention to have part time faculty working with students before and after class, then prepping or taking down equipment. This is especially important because our faculty do not have paid office hours in addition to their teaching hours. This is also a problem during unsupported daytime lectures in which faculty must take time out of class or student interactions to set-up and take-down their own demos.
- **Care and Maintenance of Expensive and Fragile Equipment**

Without lab support there is no way to guarantee the appropriate handling, storage and maintenance of expensive and sensitive equipment. With the district going into stability, the availability of funds to replace equipment over the next few years is unlikely to be available, so doing everything possible to keep the equipment we have functional is important.

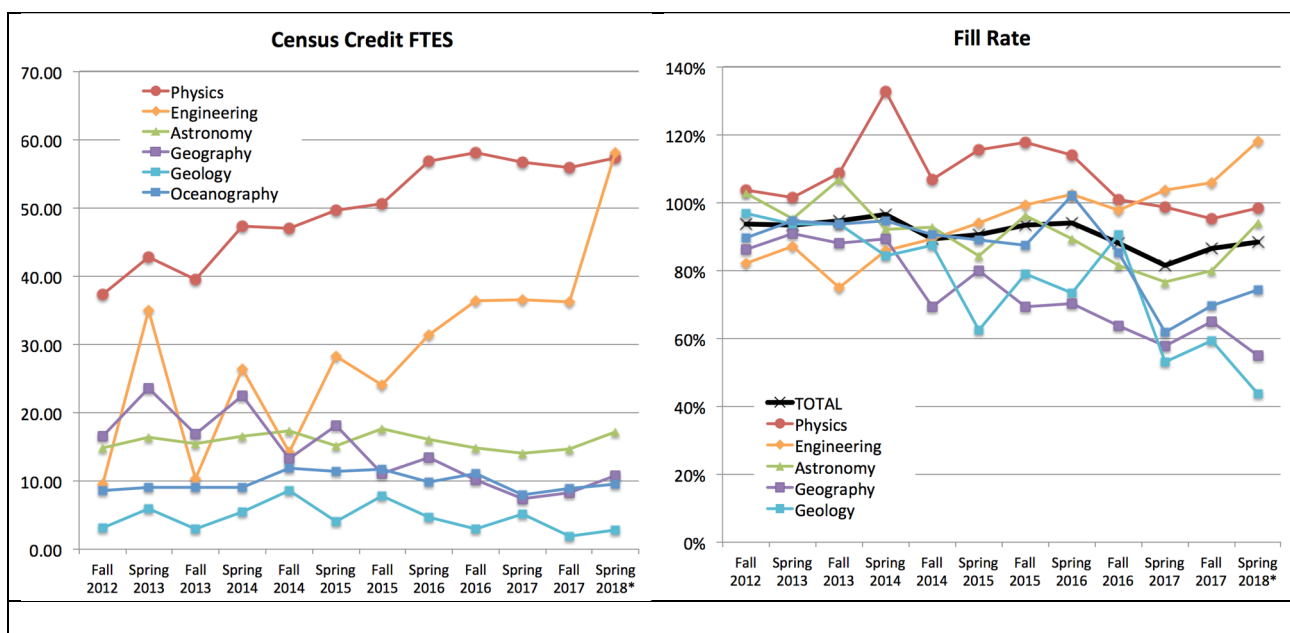
What impact, if any, have frozen or vacant positions within the department had on services or staff workload?

Engineering is currently running most of their own labs, essentially work they are not paid to do.

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4. How has the program/service area changed over the most recent five academic years and/or how is it expected to change within the next five years (i.e. growth, additional services, increased workload and reorganization) that warrants this position? **Please use both quantitative and qualitative data including, but not limited to: enrollment and productivity data, staffing or other studies, surveys, volume of students or employees served, total comp time accrued, number of hourly/ intern/ volunteer/work-study, and services provided.**
(200 words or less) (Rubric Criteria 2)



Physics has grown and continues to grow. We are currently have 57 FTES in 2017 (we averaged 51 in 2015 and 41 in 2012). Most of this growth has been seen in the recently revamped PHYC 190/200/210 series (see Physics PR fig 5), which primarily serves engineering majors. According to institutional research data, the number of engineering majors has grown from 292 (Fall 2012) to 486 (Fall 2016), a 66% increase. This trend is likely to continue as it echoes a larger trend in both college majors and the job market^{1,2}.

Physics (>50% FTES increase) and Engineering (>100% FTES increase) have enjoyed tremendous enrollment growth in the past five years (see graph for FTES data, Sp18

¹ Institute for the Future for Dell Technologies. (2017). *The Next Era of Human Machine Partnerships: Emerging Technologies' Impact on Work & Society in 2030*. Palo Alto, CA: <https://www.delltechnologies.com/en-us/perspectives/realizing-2030.htm>
² World Economic Forum. (2016). *The Future of Jobs Employment: Skills and Workforce Strategy for the Fourth Industrial Revolution*. Cologny/Geneva Switzerland: <http://reports.weforum.org/future-of-jobs-2016/>

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data has been estimated) without losing efficiency. This means the total FTES brought in by all four disciplines has risen 25% total, posing new problems:

- **Resources are already overstretched**

Physics and Earth Science have received two full-time faculty leading to extensive lab overhauls that require a lot of technician labor managing budgets, ordering, and the organization and storage of new equipment. These improvements in the labs have already begun to yield promising results in student success (see Physics PR figure 2), but their maintenance and continuing development will generate additional work for many more semesters as well.

- **Physics and Engineering are rapidly approaching growth capacity without further lab support**

We are limited in adding new sections by lab space and technician coverage. We cannot add more sections (and thus FTES) without morning coverage and the current system of faculty/students supporting the engineering labs is unsustainable. Both physics and engineering are still growing. Enrollments are full and waitlists are beginning to rise. If physics becomes bottlenecked, then that will impact the engineering and vice versa.

5. How would this position's main duties specifically support the institution's strategic priorities?

1. Acceleration
2. Guided Student Pathways
3. Student Validation and Engagement
4. Organizational Health

(200 words or less) **(Rubric Criteria 3)**

- **Student Validation and Engagement**

Instructors can spend less time concerned with the logistics of a lab and more time actually supporting students during and after lab. Labs in these disciplines are currently being reworked to introduce and reinforce basic and soft skills. Any changes to labs require technician support. Field trips will gain an additional chaperone that can provide support, contact, and instruction.

- **Guided Pathways**

Position supports all of the curriculum improvements and the addition of sections in four disciplines so that students are able to access courses when they are needed to complete their pathways in a timely manner.

- **Organizational Health**

Position will support full-time faculty and allow them to maximize their resources to better support and participate in professional development, committees and other organization-level activities.

6. How will the position impact the ability of the program or service area to innovate and meet changing needs?

(150 words or less) **(Rubric Criteria 3)**

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This position provides much needed support to four disciplines with room and demand for growth. With much-needed support, faculty can reallocate time they spend supporting the current technician.