Academic Unit/Campus Name: College of Engineering

Please complete this Word document and the accompanying Excel workbook (both of which were provided to your unit via email), and submit them to the Office of Planning & Budgeting (OPB) on or before ***Thursday, February 1, 2018****. Please email your materials to Jason Campbell.*

Please note that the responses you provide in this Word document **will** be posted to the OPB website.

1. What is the academic vitality of your school, college or campus?

Please provide both quantitative and qualitative information, leveraging published materials and previous submissions where possible. In your response to this question, you may wish to include responses to some or all of the following prompts. Please note that these are suggestions, not requirements.

- What are the top 3-5 **strategic goals** of your unit? Could any of these goals increase expenditures or decrease revenue for other units?
- What are your unit's **faculty** hiring trends from the last 2-3 years and faculty hiring expectations for the next 2-3 years? (you may provide information by department, if relevant)
- What are your unit's **student**-related initiatives, trends, or goals? (E.g. Curriculum innovation, student engagement in the Husky Experience, trends in your student credit hour production)
- What has your college done in relation to key **university initiatives**? (E.g. Population Health, Race and Equity Initiative, Husky Experience, Transforming Administration Program)

Please respond in 500 words or fewer and please use bullets, rather than dense prose.

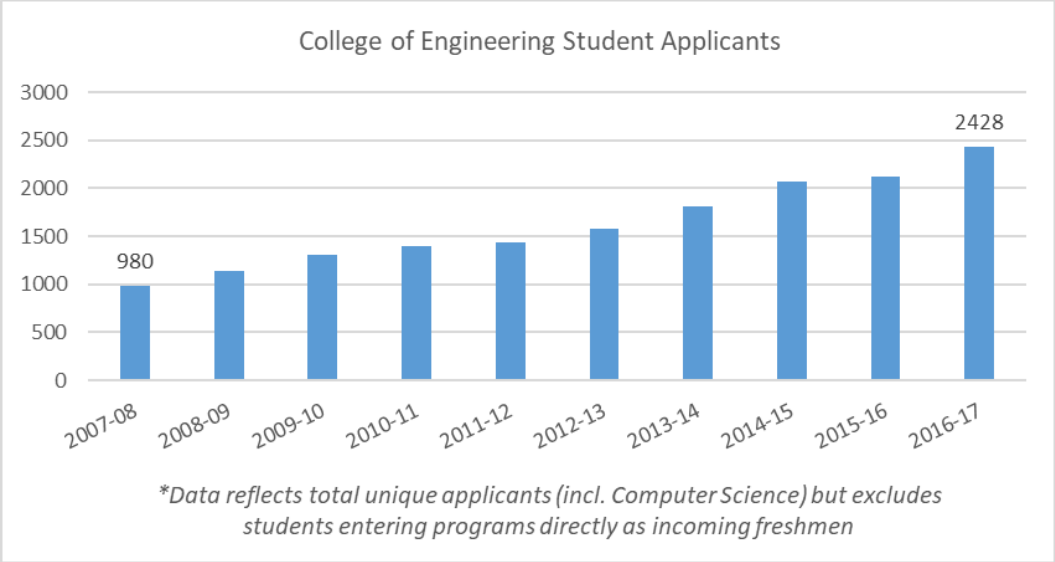
SECTION ONE: COLLEGE OF ENGINEERING STRATEGIC GOALS

Below are the strategic goals for the College of Engineering developed as a part of the 2014-19 strategic plan:

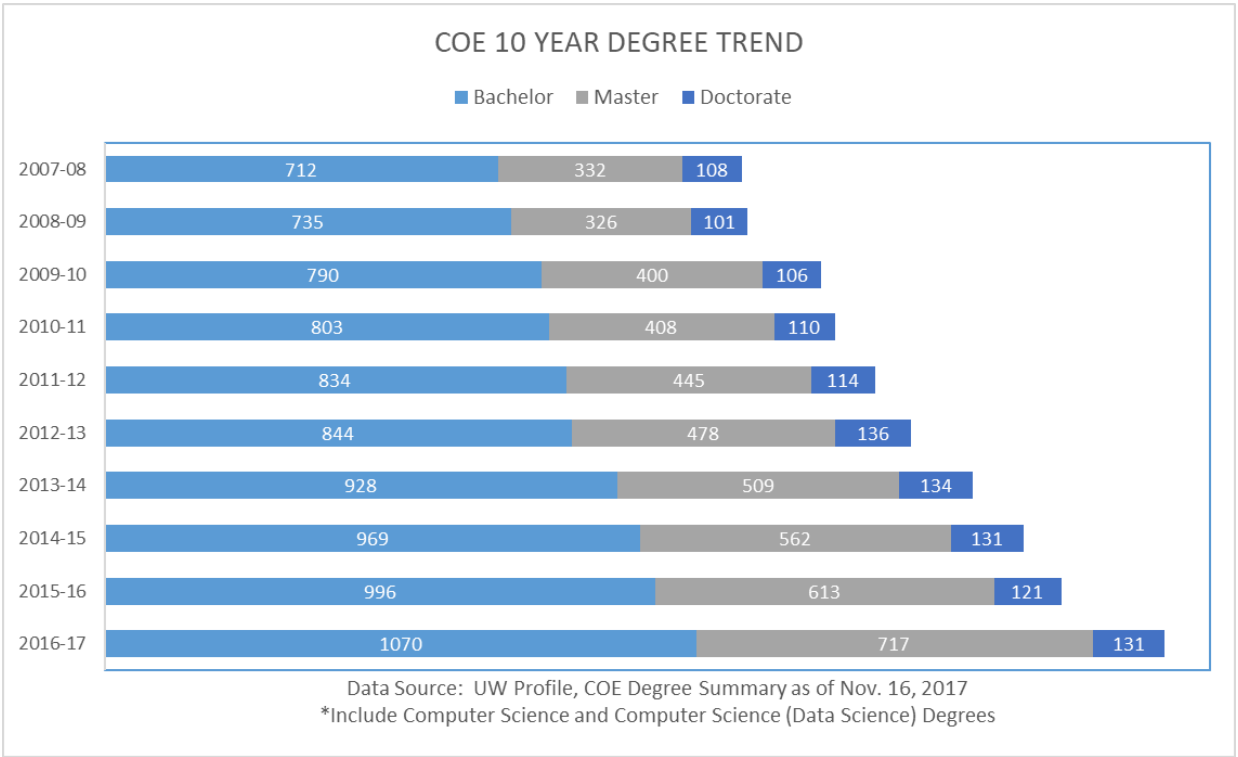
Goal 1: Provide an educational experience that prepares our students to be leaders
Goal 2: Increase diversity, inclusion, and access to foster excellence
Goal 3: Build interdisciplinary collaborations that inspire innovation
Goal 4: Create industry and community partnerships to increase our impact
Goal 5: Focus on key global challenges where we can achieve greatest impact and excellence
Goal 6: Make a significant and visible societal impact

SECTION TWO: DEMAND AND GROWTH

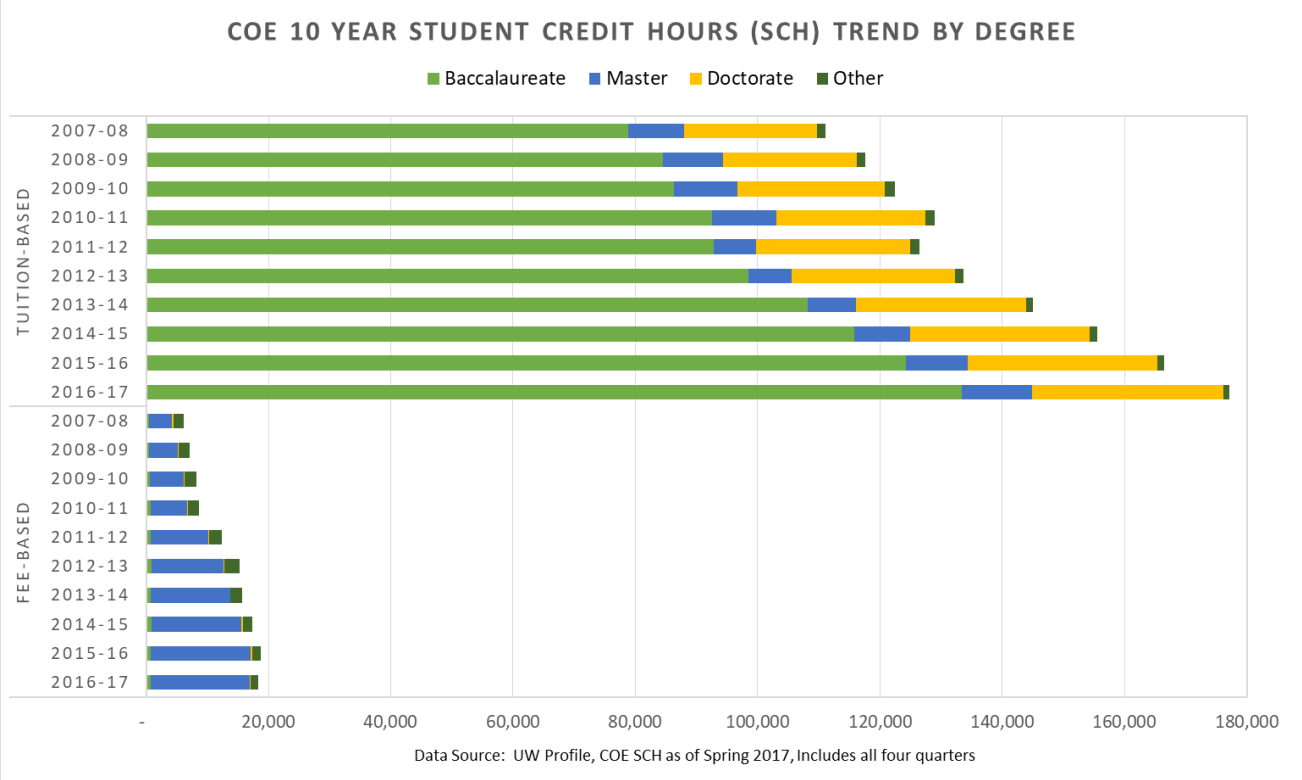
Over the past ten years, demand for degrees in Engineering and Computer Science fields has increased significantly. Industry sectors including aerospace, information technology, energy, health, infrastructure and manufacturing look to the University of Washington and the College of Engineering (COE) for qualified workers to fill high-value positions. Students in turn look to the College of Engineering for an education that provides graduates with the tools needed to address the most pressing problems of our region, state and the world. Consequently, over the past ten years, the number of student applications to departments in the College of Engineering has increased by 148% (from 980 in FY08 to 2428 in FY17).



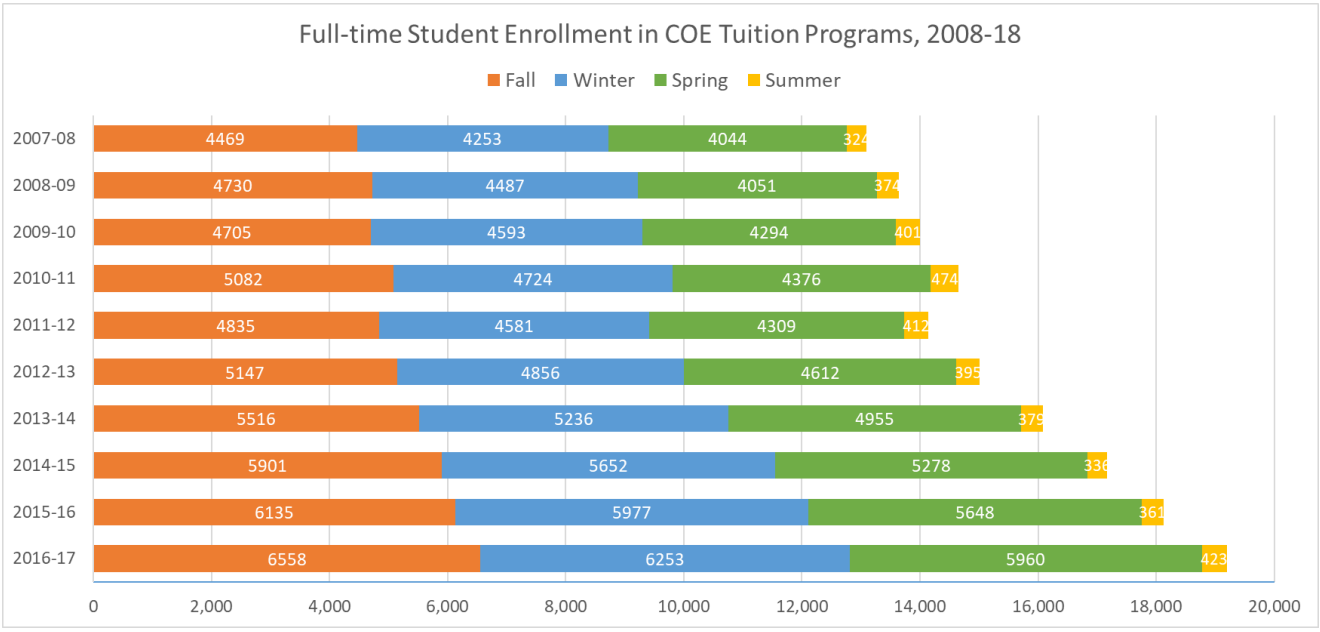
In response, the College of Engineering continues to work with the State Legislature, community stakeholders, and University leadership to identify resources that would allow COE to grow its faculty and staff, and expand its capacity to serve students and meet the demand for additional degrees. With support from these groups, the College of Engineering has increased its degree production by 66% since 2007-08 (figure includes a 50% increase in undergraduate degrees produced).



The overall number of students served in COE has also increased, as we have seen an overall increase in Student Credit Hours (SCH) produced (67%) over the same period (figure includes a 69% increase in undergraduate SCH).

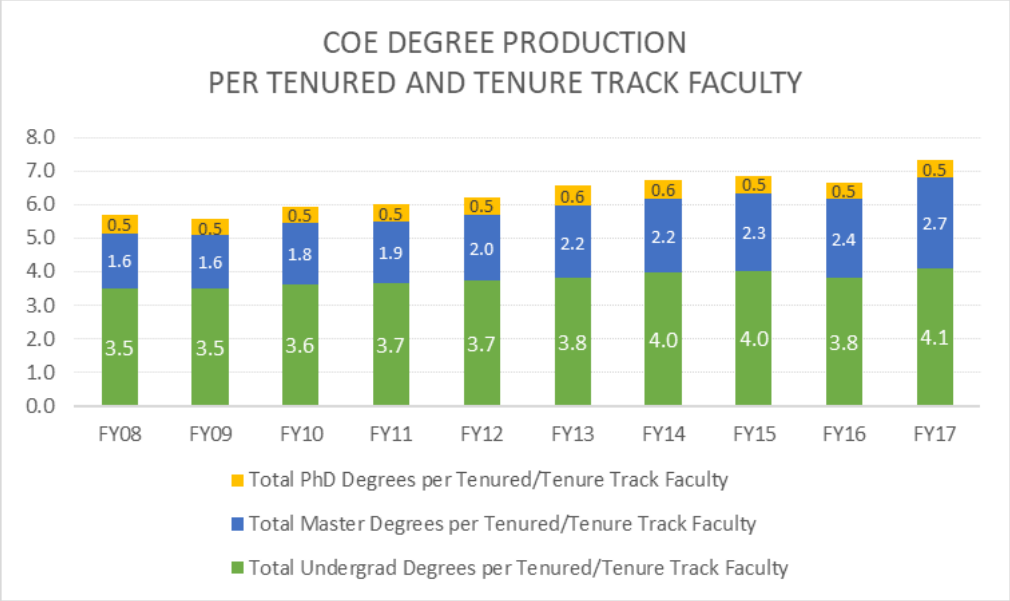


As expected, enrollment has experienced similar growth, increasing by 47% when we compare full-time enrollment in the tuition paying categories over the past 10 years.

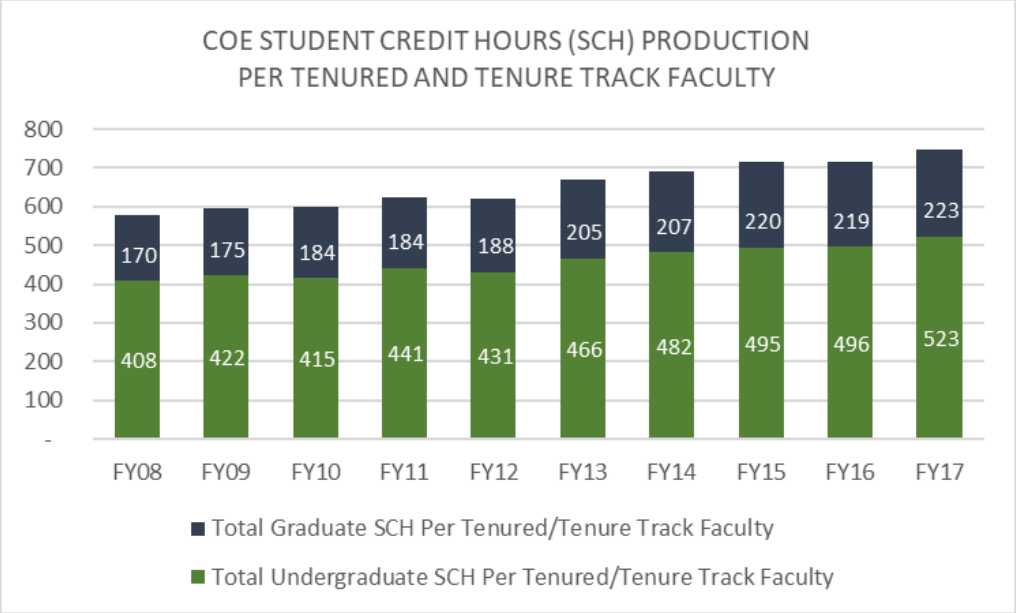


SECTION THREE: INCREASED EFFICIENCIES

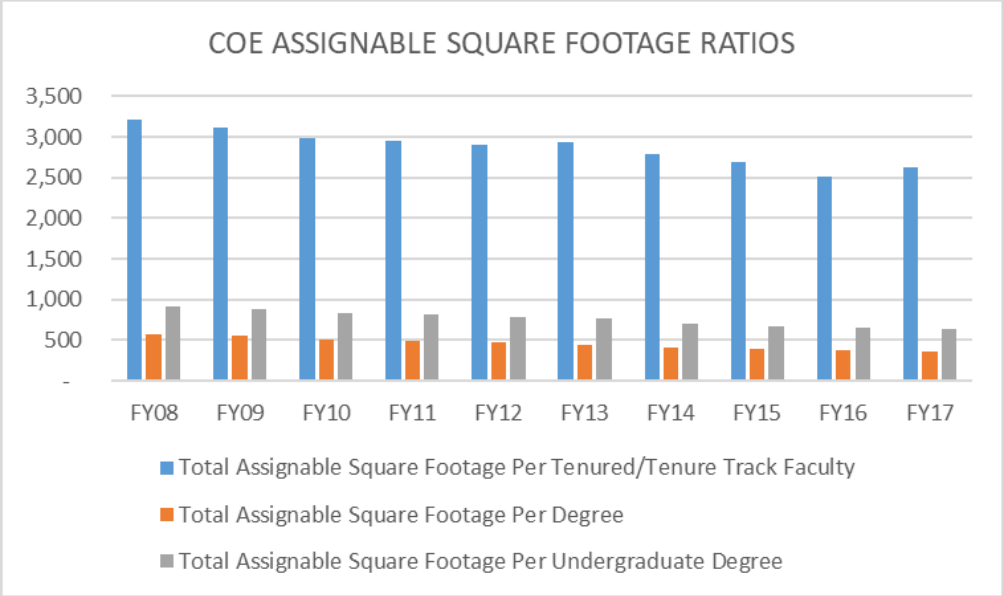
As COE has grown to meet the increased demand, the College has also become more efficient in its degree production. The table below indicates over the past 10 years, undergraduate and graduate degrees produced per tenured/tenure-track faculty ratios have increased. In short, degree production has outpaced the rate of tenured/tenure-track faculty growth. This rate of change does not include lecturers, which have increased from seven in FY08 to 22 in FY17.



Using Student Credit Hours (SCH) as a measure of production reveals the same efficiency trends. As indicated in the table below, COE has increased the overall undergraduate SCH produced per tenured/tenure-track faculty, overall graduate SCH produced per tenured/tenure-track faculty, and total SCH produced per tenured/tenure-track faculty member.

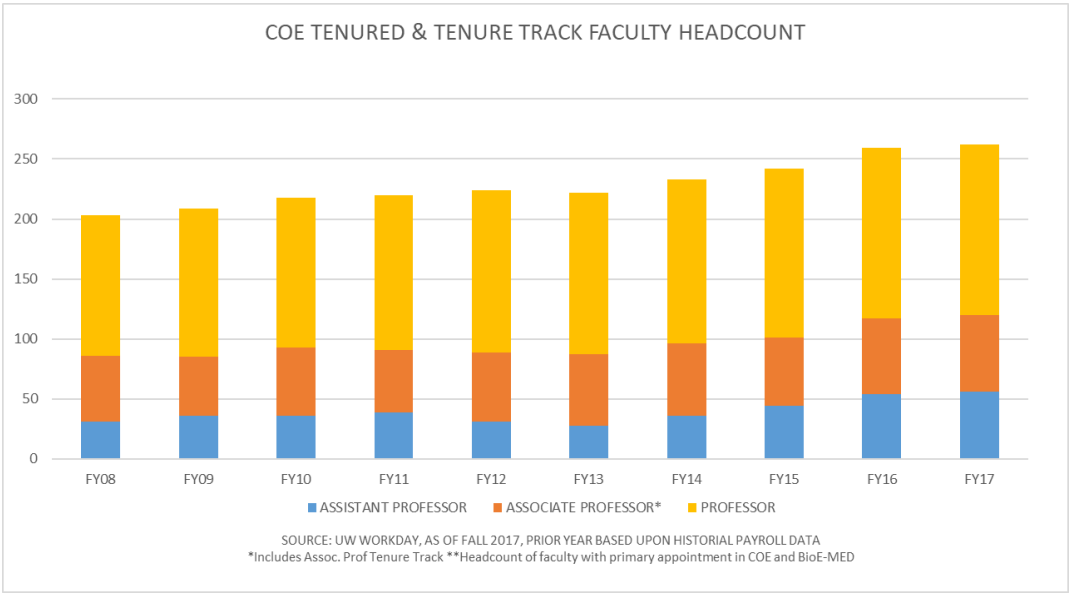


The College of Engineering has also become more efficient in its use of space. As the table below indicates, the ratio of assignable square footage (ASF), assigned to the College per tenured/tenure-track faculty, per degree granted, and per undergraduate degree granted have trended downwards over the past ten years.



SECTION FOUR: FACULTY HIRING AND FUTURE GROWTH

In response to the demand for additional degrees, the College of Engineering has increased the number of faculty over the past three biennia. Since receiving the first of four enrollment provisos from the Washington Legislature in fiscal year 2012, COE has increased its number of tenured and tenure-track faculty by 17%. (In comparison, degree production has increased 38% over the same period, while student credit hour production has increased by 41%.) The following chart details faculty growth in the tenured and tenure-track categories.



Going forward, the College of Engineering will continue to seek additional funding to help meet the demand for engineering degrees. Funding is in place for some modest faculty expansion from the last two provisios, however, this is primarily in Computer Science and Engineering. If the College is successful in obtaining additional resources from the Legislature, we hope to increase our overall undergraduate degree production to 1,400 per year (up from current 1,070). This would represent a 31% increase, and would require additional funding to recruit and hire the needed tenure-track faculty.

SECTION FIVE: ISSUES AND CONSIDERATIONS

While the College of Engineering has experienced increased demand for its degrees and has grown as a response, there are significant considerations and issues that require attention. These include:

- Faculty salaries still lag our peers at the full professor rank
- Hiring and retaining quality faculty and staff
- Providing students with the highest quality educational experience in a resource-constrained environment
- Developing a sustainable funding model for faculty hiring and start-up as well as faculty and staff raises
- Providing adequate quantity and quality of research and educational space
- Developing a staffing model that supports faculty and student growth

The College is currently working with the Elected Faculty Council and the College's Executive Committee to clarify these issues, and in partnership with faculty to develop potential solutions to address these challenges.

SECTION SIX: SPECIAL INITIATIVES

College of Engineering Major Initiatives for 2017-18

- Growth and outreach in order to meet high demand for degrees
- Growth and renovation of facilities, including teaching labs, student project and other spaces, offices, and research space
- Complete construction of Bill & Melinda Gates Center (CSEII)
- Continue to develop NanoES Institute and other research initiatives
- Explore new revenue opportunities as well as other means to repurpose resources
- Implementation of Direct to College admission slated to begin fall of 2018
- Continue capital campaign

College of Engineering Student-Related Initiatives, Highlights

- Direct to College admission for entering freshmen beginning autumn 2018. This transformative change will allow engineering students to gain entry into the college as incoming freshmen and more fully engage in their academic experience.
- The Washington STate Academic RedShirt program (STARS) supports engineering and computer science students from low-income backgrounds and underserved high schools navigate the transition to college-level engineering courses.
- The new Career Center @ Engineering, a collaboration between the College and the central Career and Internship Center, provides engineering students with a full suite of services around career and internship preparation and engagement.

- The Vertically Integrated Projects program and the Industry Capstone Design program are examples of initiatives focused on project-based learning.
- The Emerging Leaders in Engineering Program is collaborating with the Husky Leadership Initiative to expand leadership education opportunities.
- A partnership with Housing & Food Services to expand project space, with a new joint space planned for McCarty Hall.

University Initiatives, Highlights

- Population Health
  - The Engineering Innovation in Health Initiative (EIH) brings together faculty from across engineering and the health sciences to develop technical solutions to pressing health care challenges.
  - Technology for Expanding Access to Healthcare, in the department of Bioengineering (BioE).
- Race & Equity Initiative
  - The Washington State Academic RedShirt (STARS) program provides highly motivated Washington state students from educationally or economically disadvantaged backgrounds with a specialized curriculum designed to prepare them for success.
  - UW Engineering supports numerous diversity programs for engineering students through its Office of Diversity and Access, including the Minority Scholars Engineering Program (MSEP), Women in Science and Engineering (WiSE), and academic support in the Engineering Academic Center and through the Career Center @ Engineering.
  - The UW's ADVANCE Center for Institutional Change supports the participation of women in academic science, technology, engineering and mathematics (STEM) fields.
- Transforming Administrative Program
  - Beginning in 2018, an interdisciplinary shared services program, named, "Collaboration Core" will begin servicing faculty and researchers from the Colleges of Engineering and Arts & Sciences. The primary goal of this reorganization is to efficiently coordinate the operations of six interdisciplinary, mission-oriented institutes and facilities, which share many of the same opportunities and challenges, faculty, researchers, students, and staff, as well as space. Programs involved in the "Collaboration Core" include the Clean Energy Institute (CEI), Molecular Engineering & Sciences Institute (MolES), Nano-engineered Systems Institute (NanoES), and their associated facilities, Washington Clean Energy Testbeds (WCET), Molecular Analysis Facility (MAF), and Washington Nanofabrication Facility (WNF).
- Husky Experience
  - Beginning autumn 2018, Direct to College (DTC) admission will allow engineering students entry into the college as incoming freshmen and full engagement in their academic experience.
  - The Engineering Academic Center supports students through workshops, tutoring and academic support for introductory math, physics and chemistry courses.
  - The Career Center @ Engineering (CC@E), an organization that functions as a branch of the UW Career & Internship Center, offers career coaching, career fairs, on-campus interviews and workshops to prepare students for engineering careers after graduation.
  - The Engineering Living Learning Community, located in Maple Hall, provides living space for students who share an interest in pursuing engineering. Residents have access to the building's makerspace, Area 01; and students who live in the community participate in activities that strengthen connections with UW Engineering faculty, staff and alumni.
  - The Emerging Leaders in Engineering (ELE) program develops undergraduate students' leadership abilities through interactive activities, networking opportunities and practical experience.

2. What is the fiscal vitality of your school, college or campus?

To answer this question, please complete the following tabs in the Annual Review Excel workbook:

- On the **purple tabs, i.e. the "Fiscal Reports**," please:[1]
  - Review the prepopulated FY16 and FY17 fields on each fund source tab. The "Fiscal Vitality References and Tools" workbook (described below) provides information to help with this review.
  - Provide full revenue and expenditure plans for FY18, FY19, FY20, and FY21.
  - If there is an area of your unit that you wish to isolate in more detail (i.e. significant departmental self-sustaining, clinical, etc.), feel free to submit an additional fiscal (i.e. dark purple) tab.
  - Enter totals from each of the tabs into the Summary tab.
- On the "**Alternative Assumptions**" tab, please clearly identify and briefly explain any assumptions used in your calculations that are *different* from the Central Budget Assumptions on OPB's FY19 Annual Review Materials webpage. You are encouraged to refine and adjust the central assumptions, which are (in many cases) general and imperfect.
- On the "**Fiscal Vitality Qualitative Assessment**" tab of the Fiscal Vitality Report Excel workbook, please describe your unit's overall financial health. If your unit's fiscal data shows any negative (i.e. financially unhealthy) trends, please propose actions that your unit will take to improve its financial position.

The following resources are available to help you complete this work:

- **"Fiscal Vitality References & Tools" Workbook** (available on the FY19 Annual Review Materials webpage)**:**
  - FVRowByRowDefinitions Tab: row-by-row general and unit specific parameters used to compile data in the Fiscal Vitality Reports Summary and Fund Source tabs.
  - BgtTypeClassInfo Tab: list of budget types, classes, super classes, family, and community that are referenced in the FVRowByRowDefinitions tab.
  - FVExpendituresPivot and FVBudgetRevenue&CarryoverPivot Tabs: budget number detail supporting the Summary and Fund Source data in the purple tabs of the Annual Review Excel workbook.
- **FY18 GOF/DOF Budget Base**: By November 22, OPB will provide FY18 permanent and temporary budgeted values, as of October 2017 fiscal month end. You can build off these for your FY18 plan, but you will need to adjust for any budget revisions that have occurred (or will occur) since October 2017 fiscal month end.
- **BI Portal Reports** (click on the B.I.Portal link under "Products"): Each report has Overview, Technical Information, and Interpretation tabs that describe the report, what is included in the data, the data sources, and how to use the report. Note, data may differ between reports, but they can still be used as resources.
  - Biennium To Date Budget Balances
  - Remaining Balance by OrgCode and Category
  - Forecasting Template by Fiscal Year and OrgCode (please note, this tool will imperfectly forecast expenditures if units employ fund shifts or cost transfers)
- **Central Budget Assumptions** (mentioned above), which includes additional resources and guidelines.
- **Q&A Sessions on November 28 and 30.** See the FY19 Annual Review Materials webpage for details.

In completing this work, please consider the tuition rates that you are recommending as part of Question 3.

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[1] Please note that grants, contracts, and gifts are included in the report to provide the Provost with a more holistic view of a unit's financial activities. The amounts can be reconciled to FAS for biennium 2015-17. However, the grants & contracts amounts will differ from the Annual Report, prepared by the Office of Research. Also, grants, contracts and gifts amounts might differ from the BI Portal "Remaining Balance by OrgCode and Category Report." In both cases, and possibly with other BI Portal reports, this is due to differences in data elements, context, and reporting period parameters. While the information is not perfect, it is included to facilitate discussions about the unit's overall financial health.

3. *What are your school, college, or campus's tuition recommendations for 2018-19 (FY19)?*

Using the "Tuition Recommendations" tab of the Excel workbook, please provide tuition rate recommendations for 2018-19 (FY19). For each recommended tuition *increase*, please provide the information outlined below in 500 words or fewer (total). Here are a few notes and reminders:

- In last year's budget process, units submitted *preliminary* FY19 tuition recommendations, along with their FY18 tuition recommendations. You can review last year's submissions at this webpage, along with a summary of FY19 (and FY18) tuition recommendations. You may reuse responses, if they are still relevant.
- Rate recommendations for ***fee-based* programs** are handled through a separate process than tuition-based programs. Please see the Provost's letter to deans and chancellors for more information about that process.
- The legislature sets resident undergraduate (RUG) tuition rates. OPB anticipates a 2.0 percent RUG tuition increase in FY19.
- If your recommendation involves creating a **new tuition category**, please be sure to identify the original tuition category, the proposed category and suggested tuition rate for FY19. If you plan to move only a subset of your programs into a new category, please identify those programs by major name, pathway, level and type. Please contact Jed Bradley (jedbrad@uw.edu) for instructions on how to modify the "Tuition Recommendations" tab.

- Please provide information to justify the increase. This can include information about enrollment plans, peer comparisons, and/or market analyses. Please include information about how the incremental revenue generated will be spent by the school/college/department.

  Tuition Category & Academic Unit (Department) Acronym -
  - Master of Material Science and Engineering (MSE)
  - Master of Industrial and Systems Engineering (ISE)
  - Master of Chemical Engineering (ChemE)
  - Master of Applied Bioengineering (BioE)

MSE	Projected tuition increase in program costs is to offset rising operating costs. Specifically, increased costs for faculty and staff salaries, and related benefits. Additional operating costs that should be factored into the calculation of program costs include rising operating costs related to laboratory equipment and supplies.
ISE	Costs of running the program are projected to increase due to the changes in distance learning technology, cost of living adjustments for faculty and staff, and inflation. Revenue generated by the projected tuition increase would offset these increases.
ChemE	Projected tuition increase in program costs is to offset rising operating costs. Specifically, increased costs for faculty and staff salaries, and related benefits. Additional operating costs that should be factored into the calculation of program costs include rising operating costs related to laboratory equipment and supplies.
BioE	A peer comparison reveal that there are currently eight universities in the US offering similar masters degrees. Each of these programs offer degree completion in 12-15 months and include a combination of course work, design experience, and entrepreneurship training. Four are public and offer lower tuition rates for residents. The proposed rates would maintain UW's cost as the 2nd least expensive for resident and non-resident students. The range for public resident tuition is $17,019 to $45,202 (average $34,675). The range for non-resident/private is $32,121 to $75,382 (average $49,342).

- Please describe whether you expect any substantial enrollment changes (including a change in the resident/nonresident composition) or any changes in the waivers likely to be awarded to your unit's students.

MSE	No substantial enrollment changes are expected nor do we expect changes in the number of waivers.
ISE	
ChemE	
BioE	No substantial enrollment changes are expected nor do we expect in changes in waivers likely to be awarded. (Enrollment target is 25, actual enrollment will depend on the number of qualified applicants)

- Discuss the impact on student debt load.

MSE	The student debt load will be proportionate to the other tuition changes taking place at the UW.
ISE	
ChemE	
BioE	

- Confirm (yes/no) that tuition recommendations were discussed with students.[2] Please discuss your recommendations with students, even if they are the same as the FY19 proposals you submitted last year.

MSE	Yes, tuition recommendations were discussed with the College of Engineering Student Advisory Council.
ISE	
ChemE	
BioE	

[2] If the meeting schedules of faculty and student leadership groups present a challenge, please make accommodations to get approval within the necessary timeframe. If necessary, you may submit an update to OPB at a later date, after faculty and students have had an opportunity to review.

4. Please **update the carryover usage plan you submitted as part of last year's budget development process**. To do so, please complete the **"Updated Carryover Usage Plan" tab** of the Excel workbook. Please note:

- Your worksheet is pre-populated with the carryover usage plan you submitted last year and new estimated carryover totals.[3]
- Please provide updated numbers in the "Updated Plan" column.
- If you have new line items, please add rows, as needed.
- For any major updates, please provide a brief description in the "Explanation of Changes/Updates" column.

If you would like to describe any items from the worksheet in greater detail, please use the space below. **For additional guidance**, please see the example posted at the FY19 Annual Review Materials webpage.

Please note:

- If your unit has a **deficit** instead of a carryover, please confirm that you have an updated deficit mitigation plan in place with OPB. If you do not, please contact Lisa McDonald.
- If you believe the carryover for your unit is negative due to timing and if you anticipate a positive balance soon, please discuss this below and feel free to provide an updated carryover spending plan.
- Since the Office of the President and the Attorney General's Office do not retain carryover funds, as a matter of University policy, those two offices are not expected to complete this question.

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5. **Please confirm that faculty councils AND student leaders within your unit/campus have been consulted** and given the opportunity to provide input as part of this budget planning exercise.

To confirm this, please do **one** of the following:

- Briefly describe who was consulted and when, and provide points of contact for your faculty council and student leadership.
  OR
- Include signed letters from your faculty council chair and student leadership (a scanned PDF is fine) when you submit the rest of your materials.

Faculty Consultation

- *Presentation to the College of Engineering Faculty Council conducted on January 22, 2018*
- *Point of contact: Professor Sumit Roy, Faculty Council Chair*

Student Consultation

- *Presentation to the College of Engineering Student Advisory Council (COESAC) conducted on January 26, 2018*
- *Points of contact: Ryan J. Carlin, Chair and Richard V. Lee, Co-Chair*

[3] As a reminder, carryover balances are calculated at the end of each biennium and can only be *estimated* mid-biennium.