

EXECUTIVE SUMMARY  
*Academic Program Review*  
Physics

1. How did the external review committee rate the quality of the program- excellent, very good, good, adequate, or poor? How does the program compare with benchmark top-tier programs nationally? Please provide a brief rationale for the external review committee's rating.

The reviewers state, "By national standards it is now a strong department with a promising future". They further state that it is , "... on a strong positive trajectory, ... energetic and productive young faculty, lively and dedicated physics majors, and a rich, rigorous curriculum, ... USF physics majors have gone on to some of the finest graduate schools in the country." While they did not specifically compare it to top-tier colleges or universities, and they did not specify notable areas where improvements could be made (in terms of quality of research, teaching, or curriculum), the implication is that they rated the program as VERY GOOD.

2. What are the most important general issues that emerged from the external review process?

- a. *Enrollments*- the reviewers had several suggestions regarding increasing enrollment
- b. *Facilities*- They make numerous references to the inadequate facilities, particularly in how the inadequacy relates to student, rather than faculty, research needs
- Need lounge for students
  - Square footage is adequate but can be better utilized
  - battery room wasted space
  - machine shop should not be next to optics labs (dust and vibration from shop may negatively affect optics labs)
  - milling machine too old
  - main lecture hall poor- seats uncomfortable, chalk boards too small, backdrop cluttered
  - equipment in instructional labs obsolete
- c. *Curriculum*- It is traditional (they imply that this is a negative quality) except for the new course for non-majors, Masterpiece Physics. They support the department's desire for hiring an astrophysicist; they caution moving forward with the department's desire for the Materials Science initiative, which while exciting and well-conceived, places too great a burden on just one or two faculty members. Faculty- The reviewers noted important differences between senior faculty and the more junior faculty (this will be expanded in Section 3d.
- d. *Teaching workload* is a concern, particularly for first-year faculty
- e. *Support staff*- They feel that having only two support staff (one full-time secretary and one lab tech) is inadequate. A glaring problem is that the lab tech reports to a person outside of department; they suggest s/he should report to the physics chair.

3. What specific recommendations for improving the program's quality has the external review committee made to the Dean? (Please number each recommendation and ensure that the scope of each recommendation is clear when multiple curricula are covered in the report).
- a. *Enrollments*
- Greater targeting of students in General Physics I (taken by Physics, Chemistry, and CS majors); encourage students to take General Physics in freshman year so they can complete Physics major in timely manner
  - Training students to be teachers (find way to make Physics work with the Dual Degree program)
  - Admissions recruiting more widely by emphasizing SF location as well as attractive program, dynamic young faculty, and enthusiastic students
  - Target astronomy course for potential students
  - Increase sense of Physics community (student lounge, revive Society of Physics Students with designated faculty sponsor)
- b. *Facilities*
- Perk up physical surroundings
  - Service milling machine and install it far from optics labs
  - Remove cage and battery bank from battery room
  - Renovate lecture hall
  - Create student study lounge
- c. *Curriculum*
- Only recommendation related to haphazard scheduling of classes
  - Use of different length of classes (50 min, 75 min, 90 min), if continuing, should be rationalized
- d. *Faculty*
- More diversity (gender) would be desirable but may be difficult to achieve, considering few number of female PhD's in physics
  - The reviewers spoke very highly about the level of scholarship and teaching/student interaction, particularly when describing the more junior faculty.
  - The reviewers encouraged the University to pursue retirement opportunities for several senior faculty
- e. *Teaching workload*
- University should have system to reduce teaching load of new faculty during first year to help them establish research program
- f. *Support Staff*
- Lab tech should report to chair of Physics
  - would be valuable to have part-time machinist and/or electronics tech
  - need reliable computer support from someone other than the chair (not another faculty member)
4. In the opinion of the external review committee is the program following the University's strategic initiatives in that it is:
- a. Recruiting and retaining a diverse faculty of outstanding teachers and scholars.
- Hiring for gender diversity would be a goal but possibly a difficult one
  - They did not mention ethnic diversity but given that three of the five core faculty come from ethnic minority groups, it suggests that increasing ethnic diversity is not a concern
  - They do repeatedly refer to the high quality of teaching and scholarship in the department

- b. Enrolling, supporting and graduating a diverse student body that demonstrates high academic achievement, strong leadership capabilities, a concern for others, and a sense of responsibility for the weak and vulnerable.
    - The percentage of female majors is high by American standards (possibly due to high percentage of females at USF)
    - The reviewers do refer to the high academic achievement and strength of the rich, rigorous curriculum
    - It is often difficult to directly map physical sciences to social concerns. While such issues are not organic to the discipline, the reviewers concluded that the faculty show great care and concern for students.
  - c. Providing the environment necessary to promote student learning in the program.
    - They refer repeatedly to the uninviting space, poor student research facilities, and need for student lounge and better lecture hall
- 5. In what way is the program contributing to the goal of making the University of San Francisco a premier Jesuit Catholic urban university with a global perspective that educates leaders who will fashion a more humane and just world?**
- a. The strongest reviewer feedback concerns the excellent standards of the department when it comes to scholarship and teaching. The department functions as a premier physics department, and supports the value and pursuit of scientific knowledge consistently. This type of outlook will greatly benefit potential future leaders in the modern, technological world.
  - b. The research exploits of the department have attracted media attention, some of it international and substantial. This positive media coverage includes the work of multiple Physics faculty.
  - c. The reviewers do state that, "Although the numbers are relatively small, USF physics majors have gone on to some of the finest graduate schools in the country, a clear certification of the strength of the program." (contrast this statement with the implied negative evaluation of the 'traditional' curriculum referred to earlier).
- 6. What is the timetable for the response to the external review committee's recommendations for program improvement? What can the AVP's office do to appropriately respond to the review?**
- a. University needs to build new facilities for sciences.
  - b. University needs to assist with recruiting faculty, staff and students for the department.
- 7. What general comments or issues, if any, are crucial to understanding the reviewers' report?**
- a. The reviewers evaluate the department as doing a very good job, given the small number of faculty, limited resources, and the scarcity of students who arrive at USF with Physics in mind.