May 11, 2011

Memo to:       Steve Sanders, Chair
               Department of Physics and Astronomy

From:          Physics and Astronomy Alumni Advisory Board (PAAAB)
               Bill Anderson, Chair

Membership of the PAAAB includes Tom Armstrong, Bruce Barrett, John
Beacom, Mike Hennessy, Mona Kessel, Colleen McKee, Joe Shields, and
Bill Anderson. Dr. Beacom did not attend the May 2, 2011 meeting

Subject:       Report of May 2, 2011 PAAAB Meeting

The Board was again impressed by the exceptional hospitality displayed by
the Physics and Astronomy Department (hereinafter, “the Department”) faculty, staff, and students. The Board appreciates the efforts put into
preparing for the meeting and the obvious commitment to making this a
meaningful activity.

The highlights of the meeting were (1) several opportunities to interact
openly with faculty and students, (2) an effective laboratory tour, and (3)
opportunities to speak with Dean Danny Anderson (College of Liberal Arts
and Sciences) and Dean Stuart Bell (School of Engineering).

As was the case last year, each Board member was asked to consider all of
the inputs received during the meeting from a different perspective. The
perspectives were morale, infrastructure, staffing, financials, planning, and
student career development.

Blaise Pascal is credited with saying

   “I didn't have time to write a short letter, so I wrote a long one
   instead.”

We could have shortened this report but we found some subjects to have
issues from multiple perspectives. To ensure that no nuances were lost, we
elected not to condense our findings. For this reason, you will find some redundancy in this report. This is intentional.

The following paragraphs summarize the Board’s conclusions and recommendations from the six perspectives:

1. **Morale.**

   The workload seems high for graduate student teaching assistants. Most GTAs have three lab sections with an average of 20 students in each section. Some GTAs only have time to check for “work complete” rather than review lab reports in detail. Nonetheless the graduate students the Board spoke with did not complain about the workload and seemed to take the jobs demands easily in stride. Faculty morale seems much improved over last year. Certainly the expanded workspace for astrophysics/ astrobiology and condensed matter and the new office suite on the sixth floor are factors in this improvement. There seems to have been easy agreement on the priority list for the subject areas of the 6 new faculty members the Department hopes to add in the next 5 years. Also when the CLAS solicited "strategic initiative" proposals, Department faculty submitted four. This is solid evidence the faculty is engaged in taking positive steps toward the future of the Department

2. **Infrastructure**

   Although the space available for the Department in Malott Hall has grown, the building is past its useful lifetime as an experimental research facility. With the move of the Pharmacy Department out of Malott Hall in the past year, the space restrictions were eased as the Department expanded into some of that space. Space is now adequate. In addition, the sharing of conference rooms with the Chemistry Department is working well. Internet bandwidth has improved since last year. Teleconferencing has also improved, but the solution is an expensive service contract to maintain the Polycon system. The various moves into the newly vacated space are not yet
completed; many have been postponed until the end of the spring semester. The moving schedule is further complicated by the need to spend the moving funds by the end of the Fiscal Year.

Attracting high quality new faculty has been and will continue to be hampered by the inadequacies of the building for experimental facilities. The cost of renovation is exorbitant due to a variety of factors including insuring quality air flow, noise abatement and adequate power supply. A new centrally located building is needed for the experimental labs, leaving Malott Hall for classroom and office space.

3. **Staffing**

The Department continues to operate in a lean mode in terms of staffing. Faculty numbers are barely adequate to cover teaching demands while maintaining a teaching load appropriate for a research university. Teaching Assistant numbers are also barely adequate to cover laboratory sections. The College will need to provide additional staffing resources for the Department to meet the service course needs linked to the major expansion of the School of Engineering now in progress. Steps are currently underway to address issues related to support staff in the Department.

4. **Financials**

The state of Kansas is strongly resources challenged, so there is a lack of adequate funding for the state's three universities. Consequently, there is major uncertainty in the financial situation at all levels for the University of Kansas for the coming academic year. The Dean Anderson is aware of the needs of the Department but is unable to make firm commitments because of the present lack of knowledge of the KU budget for the coming fiscal year. He appears to be quite sympathetic to the outstanding needs of the Department and wants to assist the department to the best of his means.
The PAAAB strongly supports the prioritized hiring list of the Department because the present faculty is understaffed relative to its peer institutions. In addition, the plans for significantly increasing the engineering enrollment over the next few years will put strong teaching pressure on the Department to meet the increased service teaching load for these engineering majors.

5. **Planning**

Last year’s plan was clouded by uncertainty of personnel and budget cuts. This year the Department presented a comprehensive five year plan which reflects some optimism for the future and a path of growth. The plan identified three major umbrellas that have become the main focus of research for the Department. This includes: (1) Applied Physics, essentially condensed matter and biophysics (2) High Energy and Nuclear Physics (3) Astrophysics including space and plasma physics. Subsequently, the department was asked by Provost Vitter to submit proposals for multidisciplinary new initiatives. Extracting from the body of research in each of the umbrellas, the department submitted proposals on four topics: (1) Energy and Renewables, (2) Origins (astro) (3) High Energy (4) Astrobiology. The Provost has a desire to broaden each department in multidisciplinary activities hoping to draw additional external interest and support. The college deans will look for matching or overlapping interests in planning future resources.

The Board was also informed by Dean Bell of a major Engineering Initiative called the Excellence Initiative focused on increasing the number of engineering graduates. This initiative was in response to a directive from the Kansas Legislature, targeted to serve the needs of Kansas companies and the state’s need for high paying jobs. The Department’s teaching load will be directly affected by the increase of engineering students expected from the engineering initiative. All new engineering students are required to take an introductory course in physics which will strain the already stretched introductory (service) courses. The Dean Anderson
is aware of this situation and will consider the needs of the Department.

Finally, the Department plan prioritized new faculty hires. Six new positions were identified in order of priority including: (1) Condensed matter experimentalist (2) nuclear physics experimentalist (3) high energy experimentalist (4) condensed matter theorist (5) plasma astrophysicist (6) condensed matter theorist/experimentalist. No time table was given, but the plan will be used as a guide in the event new hires are approved. The plan submitted to the Board was a draft. It will be formally reviewed and signed off by the Department chair and released next week. No major changes are anticipated.

6. Student Career Development

There was a consensus that the Department should assess the amount of interest of its majors in internships with private sector businesses in the area. In-person discussions with students (probably using a free lunch as an inducement) were viewed as a reasonable first step. Board members offered the insight that internships have been desirable as a good method to find and hire new employees, thus becoming a career developing option for students. Board members could provide important liaison with the business community. A Department-developed and approved statement of purpose and policy would allow an effective means to express correctly to students, internship advisors, and human resources offices, what is expected of all parties to the arrangement. It was expressed that from the private sector company’s perspective, great positive value would be placed on a successful internship experience having some specific academically recognized value to the student as well as the incidental work experience and salary.

In addition to the above comments, observations, and recommendations, a few additional items were considered to be worth noting or amplifying:
1. The Department is to be congratulated on the high national level ranking given for its doctoral program by the National Research Council in 2010.

2. Having the largest incoming physics graduate class “in recent memory” is also something to take pride in.

3. The laboratory tours given to the Board were well thought out and well executed…small groups, good time management, and enthusiastic researchers made the tour highly effective.

4. Though mentioned several times previously, this item deserves a restatement. The long term engineering plan to increase the number of students it graduates is exciting but will be a challenge to the Department due to the obvious service teaching requirement for introductory physics courses. Dean Anderson appeared to be fully aware of this challenge. The Engineering plan cannot succeed if the Department is unable to deliver the required classes and labs.

5. The Board was interested in the upcoming capital campaign being led by the KU Endowment Association and will certainly consider ways to be appropriately involved. At the present time, an initial regional physics event in the local area is being planning. A follow-up fund raising event should be held in north Texas prior to the next Board meeting.

6. A new dynamic with more undergraduate students potentially electing to take introductory courses at local colleges before enrolling in KU may place different pressures on the Department to deliver a different balance of courses.

Thank you for giving the Board the opportunity to perform this one day review and to provide you with the inputs above. The Board looks forward to continuing to work closely with the Department.

Bill Anderson
PAAAB Chairperson