Date: July 26, 2011

To: Tracy Pellett
Associate Vice President for Undergraduate Studies

From: Kirk Johnson
Dean, College of the Sciences

Subject: 2010-2011 Program Review, Mathematics

You have asked me to provide commendations and recommendations as part of the program review process for the Mathematics Department. These observations consider the self- study, the external evaluator's report, as well as context and resource issues within the college.

The department prepared a self-study and hosted the campus visit of the external reviewer. Dr. Richard Gillman, Department of Mathematics and Computer Science at Valparaiso University, provided a detailed discussion of department successes and challenges in his report. My commendations and recommendations follow many of the same points he raised. The department's strengths are instructional performance, a sound foundation for an effective assessment program, and a strong record of faculty scholarship, grant production, and service to the university and profession. Challenges faced by the department include issues related to curriculum and staff planning, student advisement, antiquated and splintered facilities, budgetary constraints, and a need for enhanced communication within the department and between the department and other programs.

COMMENDATIONS:

The external reviewer notes several critical department strengths:

- Department philosophy and practice reflects the teacher/scholar model. The department's SEOI scores and student feedback provided to Dr. Gillman attest to the quality of instruction provided by the department.
- The faculty are engaged in the four cornerstones of the Boyer Model (the scholarship of discovery and teaching, integration and application) as evidenced by the department's rate and range of publications, conference presentations and grant applications and awards.
- The department has made great strides toward the implementation of a credible programmatic assessment plan and is beginning to consider assessment results in curricular planning.
- For a department that out of budgetary necessity became overly reliant on NTT faculty, see below, the department's recent hire has helped to stabilize and strengthen the department's undergraduate curriculum, student advisement, and scholarly output.

- The above hire has also expanded the department's ability to field its highly respected Actuarial Science program, students in this program evidence an exceptionally high employment rate upon graduation.
- New tenure-track and non-tenure track faculty appear to be integrated seamlessly into the working environment. Mentoring opportunities are available and the department has developed guidelines for consistency in faculty performance review.
- The department is to be commended for its efforts to serve place and time bound students through its summer MAT program and its teaching major at the Lynnwood Center. These programs take additional time and effort to coordinate offerings and to supervise personnel.
- The department contributes to the broader university mission through the provision of service coursework for other majors and the general education program.
- Mathematics faculty members participate in a broad array of service activities in the community, profession, and in university governance. The faculty are active in university governance, school leadership activities, as well as in K-12 state-level governing bodies.
- Mathematics has embraced state mandates (and inherent challenges) to increase the production of graduates earning STEM field teaching credentials. It generates the greatest number of mathematics teachers in the state, and is attempting to expand awareness of program offerings at the Lynnwood Center in which serves place bound students.

RECOMMENDATIONS:

The external reviewer identifies several issues that require planning or support. The following recommendations reflect the issues identified in the report.

- *Department Culture, Budgetary Constraints and Department Leadership:* while Dr. Gillman notes the department maintains positive morale and collegial working relationships, he calls upon the department to schedule consistent department meetings. Meeting regularly will allow department members to become more cognizant of the contributions each member makes to the team or greater whole (strengthening a collaborative working environment). In addition the institutionalization of a regular meeting time would allow the faculty to thoroughly discuss course requirements, instructional pedagogy, and to develop a common vision or strategic plan for the future.

  In order to better position the department for the pursuit of scarce resources, it should follow external reviewer's advice about developing a clear vision and goals for the future. What does it wish to accomplish in the next five years, and what strategies are best suited to achieving those results?

  The department should continue to work with the dean and provost on the over-reliance on FTNTT faculty. The external reviewer notes that the over reliance on

NTT faculty places additional pressure on tenure-track workloads for service and advisement. While some progress has been made during this review period a continuing dialog with the administration is warranted. Dr. Gillman also rightfully points out that the department should address equity concerns related to the disproportionate (student credit hour) instructional workload FTNTT faculty carry in comparison to TT faculty.

Given the fiscal circumstances at present, the department should continue to explore partnerships with other departments in meeting the cost of software subscriptions and sponsorship of visiting speakers.

Finally, the department should consider Dr. Gillman's suggestions for efficiencies that might generate short term gains (a thorough discussion of which courses pedagogically need to be maintained at small capacities and which can be taught in larger format classrooms, the potential consolidation of the BA and BS program course sequences, etc.).

- *Curricular Standards/ Integrity:* The external reviewer points to concerns over Central Washington University's quantitative expectations for students. This is brought up more as a call for action than a criticism of the department. The department has and should continue to be active in advancing the quantitative capability of our graduates.

  Not mentioned is the need for Mathematics and the other (particularly STEM) disciplines to ensure that greater communication occurs with respect to course scheduling The scheduling times for lower-division mathematics, biology, chemistry, geology and physics often conflict with one another. While much of this is unavoidable, greater communication between the programs could resolve some bottlenecks.

- *Student Advisement and Undergraduate Curriculum Planning:* While the department is to be commended for implementing logical course prerequisites, Dr. Gillman's findings suggest attention is needed in the area of advisement. It is recommended that the department provide students with a clearer pathway to success via the provision of better advising information. For example, the department might consider providing students with a more obvious schedule of faculty availability for advisement, implement group advising sessions at the beginning of each quarter, and ensure that students have access to an annual spreadsheet or table that displays the quarter and time in which required and elective courses are customarily taught.

  It is also recommended that the department institute a program to track its graduates (perhaps based on the model used in the self study document). This will not only yield additional assessment data concerning success rates in the world of work (employer data) and in graduate programs, but it will assist the department in student advisement. Although students express great satisfaction

with the department, they may lack a complete understanding of the value of a degree in mathematics and what undergraduates do in the world of work. Linking the curriculum with guest lectures and survey data on graduates would fill this void and assist students in making informed decisions.

- *Program Planning and Assessment:* Although Mathematics has developed a coherent set of learning objectives, the department lacks clearly delineated benchmarks for gauging student achievement. Mathematics has yet to close the loop in assessment processes; it is not entirely obvious the department utilizes assessment to inform changes in curricula or programs. Dr. Gillman notes, for example, that while the department utilizes software packages (Mathmatica, Minitab, etc.) in the required programming course and that some faculty have integrated technology into the classroom there appears to have been little assessment concerning the efficacy of current practices.

- *Recruitment and Public Relations:* Update the department webpage to include all current programs and include a section emphasizing student and faculty research opportunities and successes, and cooperative educational (field placement) opportunities. The reviewer also recommends that the department invest greater effort in recruitment and in public relations to enhance the visibility of the department and its programs in Ellensburg and Lynnwood.

  The department might wish to reconsider offering the MAT program at Lynnwood (on a self-support basis), possibly through a mixture of online, ITV, and face-to-face instructional modalities.

- *Facilities:* Five years after the last department self-study, Mathematics faculty remain located in multiple sites, the department continues to operate without a proper conference room and student meeting space, and several of its classrooms lack appropriate furnishings, fixtures and technologies. Space shortages on campus hamstring efforts to solve the department's lack of integration. The department should work with Facilities Planning, Academic and Student Life, and the college to develop a plan to replace outdated classroom furnishings and electronics.

SUMMARY:

In summary, the Mathematics Department has a well defined disciplinary focus when it comes to its undergraduate mission. The department faculty maintains a strong record of instructional performance and scholarship. However, there is work to be done when it comes to student advisement and recruitment, curricular planning and assessment, facilities and equipment, and the division of labor within the department.