

# ***Program Reviews of Mathematics Department***

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# ***What is a Program Review?***

- A means by which a department or program can improve itself, especially in relation to the mission of the department's college or university
- Beneficial to faculty, staff, students

# ***AMS: Toward Excellence***

- The process ... will clarify the strengths and weaknesses of your relationships with other departments, schools and colleges, and the central administration.
- The review will establish evaluation and subsequent planning that focuses on the identification and resolution of issues that are likely to improve your mathematics department.
- The review can advertise the successes of the department to an external group of distinguished and influential mathematicians.”
- “The process ... will clarify the strengths and weaknesses in your curricular, research, and support programs.

# *Components*

- Administration notification with guidelines (including timeline) for its implementation
- Selection of (internal and/or external) consultant team
- Scheduling/funding the site visit
- The self-study process and report
- Site visit by consultant team
- Evaluation team submits formal report/recommendations
- After the site visit: Action plan

# *Components*

## Administrative Notification

- Understand the role of administration
- Budget
- Timeline
- Expecations

# *Components: 2*

## Consultant Team

- Plan ahead: coordinate with administration (honorarium)
- Be clear about expectations
- Think about make-up of team
- Don't ask your friends (or your enemies)
- Understand their role

# ***Components: 3***

Scheduling and funding the visit

- Think carefully about the timing of the site visit
- Make sure all the stakeholders on your campus are aware of the timeline

# ***Components: 4***

Site visit by evaluation team

- Length of time: one or two days?
- Who will they speak with?
- Leave time for reflection and conversation
- Remember: it's business, not pleasure. You do not need to entertain them.

# ***Components: 5***

## Post-review

- Reaction to the report
- Identification of “actionable” items
- Celebrate the good things your department does

# ***Components: 6***

## Action Plan

- Do something
- Identify low-hanging fruit and get to work
- Focus effort on long-term issues

# *Consultants*

- They work for the institution (i.e. the dean), not the department.
- They are not necessarily your advocates
- They are not saviors
- They can only see a small slice of your program

# ***Self-study***

- A process
- A document

These are separate

# ***Self-study***

## What gets studied?

- Departmental role, scope, mission
- Curriculum
- Teaching
- Learning
- Scholarship
- Service
- Diversity
- Resources

# ***Self-study***

What does not go in?

- Complaints
- Personnel decisions
- Inter-(intra-)departmental squabbles

# *Cyclical process*

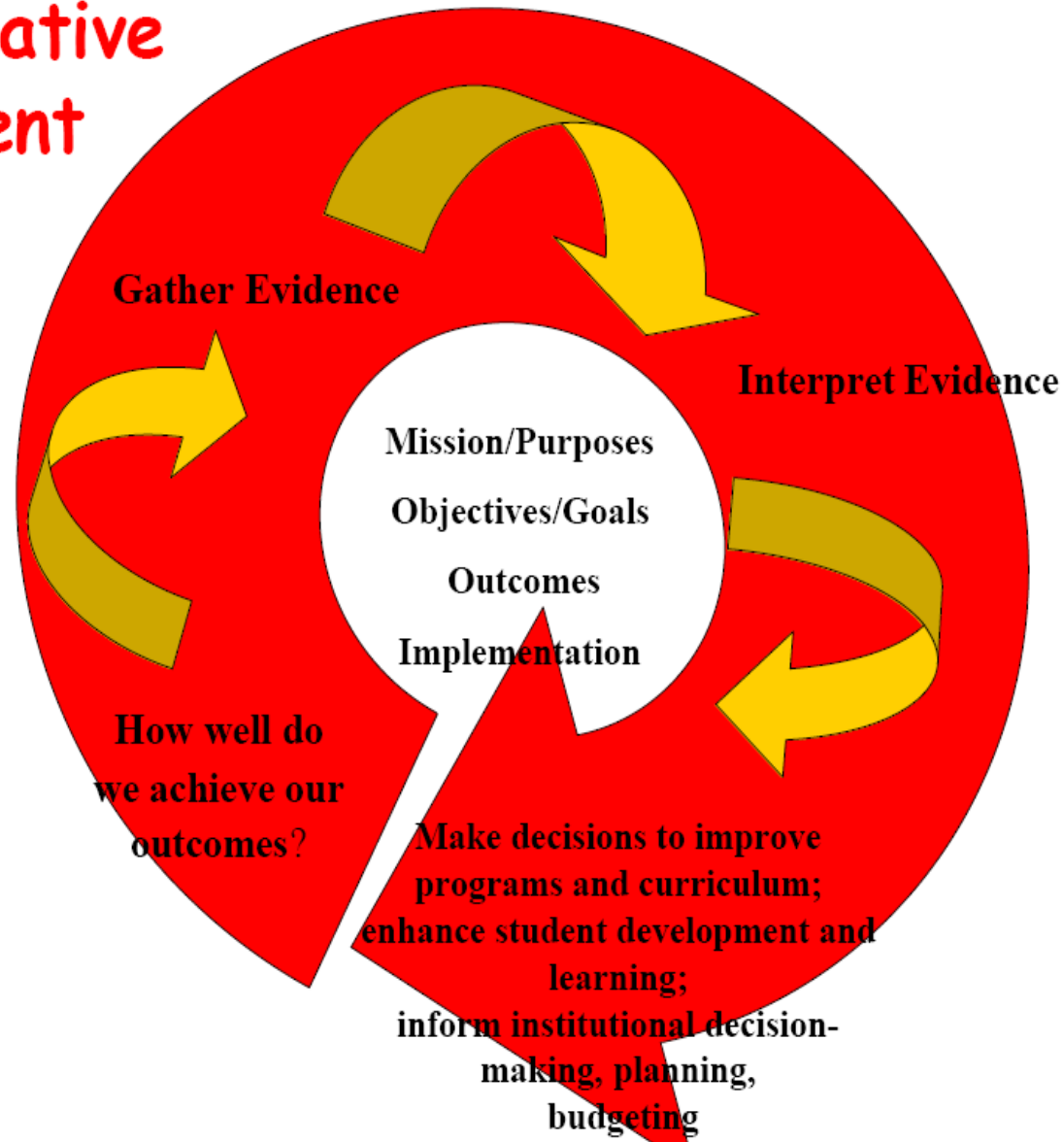
- Stages of the cycle:
  - Develop/modify/review departmental role/scope/mission, curriculum, and related service activities
  - Develop/modify/review learning outcomes for departmental majors and for each course
  - Develop/modify/review measures for assessing student learning and faculty teaching
  - Gather, analyze, and discuss data
  - Determine how well the program meets its goals
  - Repeat steps 1-5.

Underlying assumption: the program aligns with the institutional mission

# The Cycle

## The Iterative Assessment Cycle

Adapted from  
Peggy Maki, Ph.D. by  
Bresciani, M.J.



# ***Self-study activities***

- Understand, prioritize
- Data gathering and analysis
- Research
- Consult with partner disciplines
- Conduct student and alumni surveys
- Meetings, meetings, meetings: everyone must be involved

# *Data*

- Be careful—too much is worse than none at all. Don't over analyze.
- Decide what you want to know
- Understand what data is available: your institution might have a standard

# ***Do your research***

- Know what the “industry standards” are.
  - CUPM Curriculum Guidelines
  - CRAFTY: Voices of Partner Disciplines
  - BIO2010
  - AMS: Toward Excellence
  - NSF data on majors, PhDs, ethnicity

# ***Some questions***

- Students
- Faculty
- Curriculum
- Costs

# ***Students***

- Who are they? What do they achieve?  
Where do they go?
- Do you teach to the students you have?
- Do want to bring math to all or some?
- What are the goals for underrepresented groups?

# *Faculty*

- How do teaching and scholarship interact?
- How does the college support faculty development?
- What is the theory behind teaching assignments?
- Do faculty understand the prioritization between major, “service”, and general education courses?

# *Curriculum*

- Do your department objectives match the institutional objectives?
- Do your courses reflect current mathematics?
- Is it consistent with standards (NTCM, CUPM)?
- Is the technology current?
- Are the courses relevant to students?

# *Costs*

- Are there resources available to reach your goals?
- Are you aware of the effect of pass/failure rates on other programs?
- Do you understand the cost of the status quo? Are cheap courses really cheap?

# ***Self-study process***

- Administrative perspective
  - Analyze the role of the department within the institution
  - Assess the content and quality of departmental programs, pedagogy, scholarship, and service
  - Analyze potential curricular development and new opportunities for growth and contribution
  - Ensure academic excellence

# ***Self-study process***

- Departmental perspective
  - Not enough time
  - Nothing will come of it
  - Fear of assessment
  - Feeling of inertia
  - Inability to access the needed data

# ***Make it work***

- An opportunity for self-renewal
  - Clearer sense of who you are and what you are trying to accomplish
  - Strengthen the quality of your students
  - Determine where you are relative to peer institutions
  - Good publicity for the department
  - Documentation of staffing, technology, library, budgetary, Web support and other needs
  - Renewed dialogue with other departments

# *Questions to ask*

- What is the institutional mission? What is your department's mission?
- How do these align?
- If they don't, why not?

# ***Standard topics***

- QR/QL
- Interdisciplinary collaborations
- Pure vs. applied mathematics
- Undergraduate research
- Size of the major
- Leadership

# ***Staffing***

- Envision next few tenure lines
- Retirements (touchy subject)
- Disciplinary areas represented
- Role of adjuncts

# *Compiling the document*

- Shared job by the department
- Usually one person “leads the charge”
- Everyone must contribute: write, review, research, analyze
- Get a draft done early: two months before site visit.

# ***What's in the document?***

- Departmental info
- Curriculum
- Faculty
- Students
- Other

# ***Departmental Info***

- History (important)
- Secretarial support
- Budget
- Facilities: classrooms, technology, etc
- Governance
- Teaching load
- T&P procedures

# *Curriculum*

- Catalog-type info (most on web now), syllabi
- Course enrollment trends
- Compare to CUPM guidelines
- Placement
- Partner courses, general education courses
- Assessment: Learning outcomes
- External funding

# ***Mathematics Major***

- Course offerings: how often?
- “Typical” major
- External courses (e.g. cs or physics)

# *Students*

- Demographics (including diversity)
- ACT/SAT scores
- Number of majors (total and graduating) over last 5-10 years
- Course enrollments last 5-10
- Double majors
- Survey information
- Graduate school and career info.
- Undergraduate research, REU's etc

# ***Vision***

- Not just where you've been
- Where do you want to be
- Outline goals, milestones

# *Examples*

- Role/scope/mission:
  - Improve math placement of entering students
- Administration:
  - Improve departmental planning
- Curriculum:
  - Increase the number of mathematics majors
- Learning:
  - Strengthen assessment of student learning

# Goals

“Here we state the major goals and initiatives of our plan.”

- Improve our quality and international stature by making six strategic senior faculty appointments.
- Provide our faculty with sufficient time and resources for the pursuit of excellence and remain competitive in hiring, by reducing our teaching load to match the load at peer institutions.
- Integrate more fully the educational mission of the department with its research agenda and with the agendas and needs of other disciplines.
- Develop and enhance the wide variety of programs which distinguish our department on campus, nationally, and internationally.”

# *Faculty*

- CV's and bios (personal statements)
- Demographics: ages, time in rank, etc
- Disciplinary areas
- Scholarly and professional activity, including grants
- Adjuncts, part- and full-time temporary
- Assessment

# ***Other things***

- Math clubs
- Colloquia
- Events, e.g. problem contests
- Social structure
- Advising
- Web page

# ***Administration***

- How does the department and administration relate?
- Is there a shared vision of priorities?
- Is there an effective manner of communicating?

# *Resources*

- CUPM Curriculum Guidelines
- CRAFTY: Voices from Partner Disciplines
- Bio2010 and Math&Bio2010: Linking Undergrad. Disciplines
- AMS: Toward Excellence
- MAA: Supporting Assessment in Undergrad Mathematics
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# *More Resources*

- Annual Survey of the Mathematical Sciences (AMS-ASA-IMS-MAA-SIAM).
- "Conducting an External Review of a Mathematics Program and Department," by Kyle Riley, PRIMUS [13], no. 4, pp 373–383, 2003.
- Guidelines for Programs and Departments in Undergraduate Mathematical Sciences, Revised Edition, MAA, February 2003. Available at [www.maa.org/guidelines](http://www.maa.org/guidelines).
- MAA Basic Library List. Available through MAA Reviews
- Statistical Abstract of Undergraduate Programs in the Mathematical Sciences in the United States (CBMS Survey 2005), by David J. Lutzer et al.

***One More***

[www.maa.org/ProgramReview/](http://www.maa.org/ProgramReview/)