

Assessment of Library Collections  
Academic Program Review

**Mathematics**

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The four appendices to this report are not on the web site of the Office of Planning and Institutional Effectiveness—but may be requested from the library.

While the library will go forward, as annual budgets allow, with acquisitions recommendations of program reviews, a more durable approach is the comprehensive collection development plan set as a university Millennium Strategic Goal.<sup>1</sup> That planning process will broaden the library's collaborations with each program, identify resources needed to build research-level collections, and provide a framework for long-range budgeting. This report lays some of the groundwork.

**SUMMARY**

**Books.** Through its book approval plan, the library automatically receives all university press publications in Mathematics, as well as some monographic series: *Lecture Notes in Mathematics* (Springer Verlag); *Notices of the American Mathematical Society*; *Surveys in Differential Geometry* (Leigh University); and *UMAP ILAP Modules* (Consortium for Mathematics and Its Applications).

The approval plan for the Statistics program covers all trade publisher titles on *probability*, *statistics*, and *stochastic processes*. The plan for Computer Science covers all guidebooks to hardware, software, etc. by trade publishers. On a broader level, the plan covers all books on *history of science* or *contemporary social or public policy aspects of science*.

**Journals.** The library has 211 titles funded under Mathematics: 92 print only and 119 online—with 43 both print and online. For collection assessment, the library's holdings are compared to the citation-ranked titles in three fields: Mathematics; Mathematics, Applied; and Mathematics, Interdisciplinary Applications.

**Online Resources.** The library's collections of databases and other online resources, about 275 in number, include the core ones in Mathematics but may be expanded as suggested in the proposal below.

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<sup>1</sup> Cross-functional plan for graduate education, goal 3 at <http://www.fiu.edu/~pie/>.

**Collection Development Proposal.** *Project Euclid* is an online-journal package of 10 titles in Mathematics and Statistics, with a planned expansion to 14 in 2004. It provides online access to additional journals. Its cost would be \$1,160. A spreadsheet details its coverage.

**Faculty Decisions.** The faculty should (a) determine the high-priority and the medium-priority journals for acquisition from the three citation-ranked lists; (b) make a recommendation on the proposed online-journal package; and (c) advise the library on any other resources or services to build research-level collections.

## MAIN REPORT

**SCOPE.** This report for Mathematics focuses on books, journals, and online resources. Four spreadsheets are appended: three are journal-collection evaluations; the last one is a detailed description of what the proposed journal package would add to the library's collections.

**METHOD.** As a rule, it is not feasible to make a comprehensive assessment of "all" library resources that may be relevant to a particular program or literature, given the interdisciplinarity of programs and literatures alike, as well as library budget lines. To structure this situation, subject literatures and library collections must be bounded in certain ways, as described in the sections below. The principal method is to focus on the core journals of a given field according to citation-impact rankings in the *Journal Citation Reports (JCR)* database.<sup>2</sup>

## BOOKS

Through its book approval plan, the library automatically receives all university press publications in Mathematics and some monographic series: *Lecture Notes in Mathematics* (Springer Verlag); *Notices of the American Mathematical Society*; *Surveys in Differential Geometry* (Leigh University); *UMAP ILAP Modules* (Consortium for Mathematics and Its Applications).

The approval plan for Statistics includes all trade publisher titles on *probability, statistics, and stochastic processes*; and for Computer Science all guidebooks to hardware, software, etc. by trade publishers; and for statistics. On a broader level, the plan covers all books on *history of science* or *contemporary social or public policy aspects of science*; and all adult-level titles reviewed in *The New York Times Book Review* or *Times Literary Supplement*.

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<sup>2</sup> The core science and social science titles are ranked in *JCR*. Citation-impact analysis is based on Bradford's Law, that most of the important papers in a given field appear in a relatively small set of journals. See Hans Verner Holub et alia, "The Iron Law of Important Articles," *Southern Economic Journal* 58 (1991): 317-28.

In FY02, 275 books in QA as a whole were sent on approval: 111 in Mathematics (with another 27 in Statistics and 137 in Computer Science). Those 275 had an aggregate cost of \$17,066.

Series standing order activity in FY03 may be summarized as follows:

- *Lecture Notes in Mathematics* (Springer Verlag): 25 titles
- *Notices of the American Mathematical Society*: bimonthly periodical
- *Surveys in Differential Geometry*: annual volumes, usually received in December
- *UMAP ILAP Modules*: annual volumes, usually received in December.

In a normal budget year, the Department of Mathematics has \$5,000 on University Park campus for faculty book orders, \$500 on Biscayne Bay campus.

Total monographic volume counts were requested. Mathematics: 9,473; Statistics: 1,023; Computer Science: 5,081; total for QA class = 15,577.

**Online Books.** Of the 27,280 *NetLibrary* electronic books owned by the library, 309 titles have *mathematics* as a keyword descriptor; and there are 120 *mathematics* subject headings. The library does not make title selections of its holdings but relies on bulk acquisitions through a regional network. The *NetLibrary* portal is at <http://www.fiu.edu/~library/elibrary/ebooks.html>.

**Retrospective Book Acquisitions.** As part of its comprehensive collection development plan, the library will likely acquire relevant university-press books of the postwar decades (before FIU existed) that are still in print; some subjects are treated in bibliographic essays.<sup>3</sup>

## JOURNALS

The library has 211 titles funded under Mathematics: 92 print only and 119 online—with 43 both print and online.

Since it is not possible to identify all of the journals relevant to a field (given interdisciplinarity), the question is whether the library is missing needed or important journals. *Need* is based on local demand, according to interlibrary loan data.<sup>4</sup> *Importance* is measured by citation-impact rankings or other indicators of core literatures. Three *Journal Citation Reports* lists are used for this collection analysis.

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<sup>3</sup> For example, V. V. Raman, “Science and Society,” *Choice* 9 (January, 1973): 1087-99.

<sup>4</sup> To assess local demand, the library identified the journals most often requested through interlibrary loan over the past three years. In terms of access-versus-ownership economics (royalty payments compared to subscription prices), 18 titles of the total set of 135 proved to be more cost-effective to own. Those subscriptions began January 2003. None of the 18 was in Mathematics or Statistics. On that measure, the collections in these fields are cost-effective.

Comparison of library holdings to the core journals in **Mathematics** is shown in spreadsheet 1. Of the total 161 titles, the library has 77 (48%).

Comparison of library holdings to the core journals in **Mathematics, Applied** is shown in spreadsheet 2. Of the total 158 titles, the library has 83 (52%).

Comparison of library holdings to the core journals in **Mathematics, Interdisciplinary Applications** is shown in spreadsheet 3. Of the total 20 titles, the library has 14 (70%).

As a rule of thumb, a journal should meet two criteria to be an acquisition priority: *broad caliber* (in the scholarly communication system) and *local relevance* (to campus research and curricular interests). *Local relevance* is the stronger factor. The citation-rankings approach, with its focus on established journals, has a somewhat conservative bias in that it tends to exclude newer titles that, though lacking a certain impact in the scholarly system, may pertain to campus interests. Conversely, some (citation-ranked) titles of *broad caliber* may not fit local interests.

Once the faculty have identified which of the titles not in the library's collections are of high priority, medium priority or no interest, the library will make cost projections.

## ELECTRONIC RESOURCES

The library's collections of databases and other online resources, about 275 in number, include the core ones in statistics: *Current Index to Statistics* and *MathSciNet*. Descriptions at <http://www.fiu.edu/~library/subjects/statistics.html>.

**Collection Development Proposal.** *Project Euclid* is an online-journal package of 10 titles in mathematics and statistics, with a planned expansion to 14 titles in 2004. It would cost \$1,160. Description at <http://projecteuclid.org/Dienst/UI/1.0/Home>.

Spreadsheet 4 details this package.

- No print subscriptions could be cut for the sake of cost-effectiveness this late in the year. Faculty recommendations on such cuts would be implemented in 2005.
- The package would add eight titles to the library (three having citation-impact rankings).
- *Project Euclid* would enable the library to shift three print subscriptions to online access: *Notre Dame Journal of Formal Logic*; *Bernoulli*, and *International Statistics Review*.
- It would also enable the library to begin online access to some journals for which separate licenses would be required: *Advances in Applied Probability*; *Journal of Applied Probability*; and *Michigan Mathematical Journal*.

## **OVERVIEW for COLLECTION DEVELOPMENT**

The library's collections in Mathematics are in good shape in terms of *core* resources. Yet, the essential matter is whether these collections are commensurate with the faculty's needs—and, concomitantly, with the university's aim to have research-level library resources and services in appropriate fields. This report, to be supplemented with the recommendations of the faculty, lays the groundwork for the collection development plan in Mathematics.

The framework of book acquisitions might possibly require expansion. Should the approval plan in Mathematics, limited to university-press titles, be expanded in certain defined subject areas to include trade-publisher coverage? And, are there additional monograph series for which standing orders should be established?

Journal collections are difficult to assess in the sciences, given the high specialization and cost of many titles. The only reliable method is for the faculty to make prioritized recommendations from the citation-ranked lists—as well as drawing up lists of needed non-ranked titles based on the faculty's knowledge of the specialized literatures.

The faculty should also make a recommendation on the *Project Euclid* package—and on any other resources or services to build research-level collections.

On a final note, previous collection assessments in the program review process have included a graph of inflationary pressures in the scholarly communication system. Along with such trends “out there” are direct campus factors that make collection development increasingly problematic as an FIU resource-allocation process. Any inventory of such factors would include constant growth of research and curricular interests, program diversification, and the university's goals for a broad expansion of new Ph.D. programs and now a medical school. Thus, collection assessments emphasize the importance for each program to advise the library on the specific resources and services that would best serve research productivity.