MATHEMATICS
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I.  DESCRIPTION

A.  Purpose: To support the teaching and research in the Department of
Mathematics. The collection also supports mathematical research throughout the
campus. Recently, the collection has begun to support the resource-sharing
activities of the national Mathematics Document Delivery Center.

B.  History of Collection: In 1870 the University Library contained 68
books of a mathematical and astronomical nature. In 1906 the Mathematics
Departmental Library was opened in the Natural History Building; a complete
set of Crelle's Journal of Mathematics was the first major addition to the
library. The early years saw the purchase of the most important mathematics
journals even though the Head of the Mathematics Department was told it was
very foolish to spend $200 on mathematics books at Illinois where no one could
possibly read them. In 1927 the library moved to the Mathematics Building
where the librarian at the time, Professor James B. Shaw, oversaw its
arrangement. The Mathematics Library grew from 1,900 volumes in 1910 to 12,950
in 1939. Growth has continued so that over 28,000 volumes comprise the
mathematics collections at the University of Illinois.

C.  Estimate of Holdings: 64,000 volumes in the Mathematics Library with
over 950 current serial subscriptions. See I.F. for additional information.

D.  State, Regional, and National Importance: The mathematics collection
is ranked as one of the best three in the country (cf. University of Michigan
and Princeton), although we must now be recognized as the finest due to our
Title II-C grant. We have the most comprehensive collection of Russian
mathematical works as well as one of the finest journal collections in terms
of length of run and international coverage. Our monograph collection is
superb; as national Mathematics Document Delivery Center we now acquire all
monographs reviewed in Mathematical Reviews (1940 to date).

E.  Unit Responsible for Collecting: Mathematics Library

F.  Location of Materials: The Mathematics Library holds over 64,000
volumes and 2,000 microforms. The Bookstacks has 9,200 volumes and the Rare
Book and Special Collections Library 1,150 volumes. Mathematical materials can
be found in almost every departmental library, but the other substantial
collections are to be found in Engineering Library, Physics Library
(mathematical physics), Biology Library (biomathematics), and Commerce Library
(mathematical economics).

G.  Citations of Works Describing the Collection:

Downs, p. 145

Major, pp. 16, 35, 37-38, 50

Stanford, Edna Cleo. The History of the Department of Mathematics at the University of Illinois. Urbana, Illinois: Thesis, Master of Arts in Mathematics, 1940.

U.S. Department of Education Title II-C grant application. "Mathematics Document Delivery and Reference System". 1981. (Unpub.) See pp. 19-21.

## II. GENERAL COLLECTION GUIDELINES

A. Languages: Standard statement, except that special efforts are made to collect in all languages. Special emphasis is made in Russian and, lately, in Chinese and Japanese. The mathematics collection is more multilingual than any other science collection.

B. Chronological Guidelines: No restrictions. There is a strong interest in the history of mathematics; routine purchases are made of materials to be housed in the Rare Book and Special Collections Library.

C. Geographical Guidelines: No restrictions.

D. Treatment of Subject: Standard statement. However, our collection efforts have been broadened in order to support the Mathematics Document Delivery Center: we now collect materials in the applied areas of mathematics which are allied with astronomy, biology, computer science, economics, engineering, etc. if the units responsible have not collected them. Duplication is avoided whenever possible. Textbooks for 300-400 level courses are purchased.

E. Types of Materials: Standard statement.

F. Date of Publication: Standard statement. Special efforts are made to acquire rare items or classics in the history of mathematics.

G. Place of Publication: No restrictions.

## III. COLLECTION RESPONSIBILITY BY SUBJECT SUBDIVISIONS WITH QUALIFICATIONS, LEVELS OF COLLECTING INTENSITY, AND ASSIGNMENTS

| SUBJECTS | ES | CL | DL | ASSIGNMENTS |
|---|---|---|---|---|
| Mathematics, general | 4 | 4 | 4 | MATHEMATICS |
| Philosophy of mathematics | 3 | 4 | 4 | MATHEMATICS |
| Mathematical logic | 4 | 4 | 4 | MATHEMATICS |
| Mathematics, study and teaching | 3 | 2 | 3 | EDUCATION/ mathematics |
| Mathematics, history, biography | 4 | 4 | 4 | MATHEMATICS/ history of science |
| Mathematical tables and formulas | 3 | 2 | 4 | MATHEMATICS |
| Mathematical recreations | 2 | 2 | 3 | MATHEMATICS |
| Arithmetic | 4 | 4 | 4 | MATHEMATICS |

| SUBJECTS | ES | CL | DL | ASSIGNMENTS |
|---|---|---|---|---|
| Computer arithmetic | 2 | 2 | 3 | MATHEMATICS/ engineering |
| Algebra, general | 4 | 4 | 4 | MATHEMATICS |
| Combinatorics | 4 | 4 | 4 | MATHEMATICS |
| Graph theory | 2 | 3 | 4 | MATHEMATICS |
| Homological algebra | 4 | 4 | 4 | MATHEMATICS |
| Group theory | 4 | 4 | 4 | MATHEMATICS |
| Linear, multilinear algebra, matrix theory | 4 | 4 | 4 | MATHEMATICS |
| Algebraic theory | 4 | 4 | 4 | MATHEMATICS |
| Number theory | 4 | 4 | 4 | MATHEMATICS |
| Algebraic fields/algebraic numbers | 4 | 4 | 4 | MATHEMATICS |
| Set theory | 4 | 4 | 4 | MATHEMATICS |
| Universal algebra | 4 | 4 | 4 | MATHEMATICS |
| Commutative rings and algebras | 4 | 4 | 4 | MATHEMATICS |
| Associative rings and algebras | 4 | 4 | 4 | MATHEMATICS |
| Non-associative algebra | 4 | 4 | 4 | MATHEMATICS |
| Lie algebra | 4 | 4 | 4 | MATHEMATICS |
| Machine theory--formal languages | 2 | 2 | 2 | ENGINEERING/ mathematics |
| Machine theory--coding theory | 2 | 2 | 2 | ENGINEERING/ mathematics |
| Game theory | 3 | 3 | 4 | MATHEMATICS/ commerce |
| Probability and statistics-- see Mathematics/statistics statement | | | | |
| Numerical analysis | 2 | 3 | 4 | MATHEMATICS/ engineering |
| Mathematical analysis, general | 3 | 4 | 4 | MATHEMATICS |
| Calculus | 4 | 4 | 4 | MATHEMATICS |
| Analytical numbers | 4 | 4 | 4 | MATHEMATICS |
| Ordinary differential equations | 4 | 4 | 4 | MATHEMATICS |
| Partial differential equations | 4 | 4 | 4 | MATHEMATICS |
| Topological groups/lie groups | 4 | 4 | 4 | MATHEMATICS |
| Harmonic analysis | 4 | 4 | 4 | MATHEMATICS |
| Functional and integral equations | 4 | 4 | 4 | MATHEMATICS |
| Geometry, general | 4 | 4 | 4 | MATHEMATICS |
| Algebraic geometry | 4 | 4 | 4 | MATHEMATICS |
| Topology | 4 | 4 | 4 | MATHEMATICS |
| Global analysis | 4 | 4 | 4 | MATHEMATICS |
| Infinite geometry | 4 | 4 | 4 | MATHEMATICS |
| Differential geometry | 4 | 4 | 4 | MATHEMATICS |
| Mathematical physics | 3 | 4 | 4 | MATHEMATICS/ physics |
| Mathematical economics | 3 | 3 | 4 | MATHEMATICS/ commerce |
| Control theory | 3 | 3 | 4 | MATHEMATICS/ engineering |