



THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

LIBRARY  
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## Mathematics Collection Development Policy

Last Updated 18 November 2005

### 1. Purpose of the collection

The Library purchases resources on mathematics to support research and teaching activities in the School of Physical Sciences including the ARC Centre of Excellence for Mathematics and Statistics of Complex Systems (MASCOS), Centre for Applied Dynamical Systems, Mathematical Analysis and Probability, (CADSMAP), Centre for Mathematical Physics (CMP), Centre for Statistics (CSTAT), Advanced Computational Modelling Centre (ACMC), Centre for Discrete Mathematics and Computing (CDMC), Centre for Plant Architecture Informatics (CPAI), Financial Mathematics Research Group and The Ecology Centre (TEC).

### 2. Primary user groups served

- The School of Physical Sciences offers undergraduate subjects in pure mathematics (analysis, algebra and combinatorics), applied mathematics, scientific computing, financial mathematics and statistics. These subjects are available to students in several faculties and include service courses in mathematics to engineering students. The majority of subjects are for students pursuing B.A. or B.Sc., at pass or honours level, Postgraduate Diploma in Science (Mathematics), or Masters degrees by course work in literary studies or scientific studies. The school also offers postgraduate research degrees leading to M.A., M.Sc. or Ph.D.
- The research interests of staff and graduate students are listed below:
  - high performance computing, visualisation of complex data sets, advanced informatics, high performance modelling and software development
  - combinatorial designs, their relationship to algebras, to graphs and to error-correcting codes and their applications to various aspects of cryptography and computer security
  - parallel computing, operations research, fluid mechanics, computational techniques, land management resources, drought monitoring, production of scientific software

- differential equations, convex and set-valued analysis and optimisation, nonlinear studies, wavelet analysis, dynamical systems and chaos, mathematical finance, Markov processes, networks and telecommunications theory, non-stationary time series
- design of analysis experiments, industrial statistics, biostatistics, medical statistics, applied stochastic models, data analysis and applied statistics, finite mixture modelling, computational statistics
- mathematical physics, especially Lie theory, quantum groups, quantum affine algebras, supersymmetry, supergeometry, knot theory, 3-manifolds, integrable models in statistical mechanics, foundations of quantum mechanics, algebraic methods in quantum chemistry, quantum field theory, quantum chaos, biomathematics

### 3. Description of existing collection

The majority of the collection is housed in the Dorothy Hill Physical Sciences & Engineering Library, although older less-used material may have been withdrawn to the on-campus warehouse.

63% of *Mathematical reviews* core titles are held, a significant proportion from volume one onwards. A complete and current set of *Lecture notes in mathematics* is held, and issues from 1997- are available online. Standing orders are held for *Translations of mathematical monographs*, *American Mathematical Society translations, series 2*, *Cambridge tracts in mathematics*, *Springer series in computational mathematics*, *L(ondon) M(athematical) S(ociety) monographs*, *Grundlehren der mathematischen Wissenschaften*, *Applied mathematical sciences*, *Graduate texts in mathematics*. The full text database *ACM Digital Library* (Association for Computing Machinery) which contains articles published in ACM periodicals and proceedings since 1986 is available online. The full text of 1200 Elsevier Science journals is available through *Science Direct*.

The reference collection includes an extensive collection of recent handbooks, specialist and general encyclopaedias, dictionaries and indexes. It is particularly strong in mathematical tables. *MathSciNet*, an online database, provides access to *Mathematical reviews* and *Current mathematical publications* from 1940 to the present. *Current index to statistics* is available online from 1974 onwards and *Zentralblatt fur Mathematik und ihre Grenzgebiete* is available online from 1931 onwards. *Inspec* (incorporating *Physics abstracts*) is available online from 1969 onwards. The current awareness database *Current contents* is available from 1994 onwards as well as access to the table of contents alerting service *SwetsNet*. *Science Citation Index* is available as part of the *Web of Science* database from 1945 onwards.

Current awareness services are facilitated by *Web of Science* and *ScienceDirect* electronic databases.

#### **4. Interdisciplinary relationships**

The mathematics collection is supported by titles in physics, computer science and mechanical engineering.

#### **5. Scope of current collecting**

##### **1. Languages collected**

Foreign language monographs are not normally collected. Some foreign language journals are received by exchange or purchase. These include Russian titles too expensive in translation.

##### **2. Geographical areas collected**

Not relevant to mathematics.

##### **3. Chronological periods collected**

No chronological period is excluded.

##### **4. Types (formats) of material collected**

No material is excluded because of its format.

To ensure timely access to core journals by teaching and research staff, journal titles which become available in electronic format, particularly those of professional organisations such as the American Mathematical Society, are purchased unless costs are prohibitive.

The purchase of multimedia packages which support teaching and learning in the subject area is encouraged and is increasing.

##### **5. Publication dates**

Collecting focuses on current imprints. Retrospective purchase of items such as back runs of journals may be made to support new research programs.

##### **6. Special considerations**

None.

##### **7. Conspectus**

In the areas of current research interest, the level of collection was either 4 or 3b at the time of the *Conspectus* evaluation.