Major Instruction Plan: Mathematics & Statistics

College: College of Arts and Sciences
Librarian: Jackie Werner

Description of Major/Programs
The department offers a Bachelor of Science degree in mathematics, with four concentrations for majors to choose from: actuarial science, computer information systems, and computer science. Majors can also choose an emphasis in statistics. The department also offers a minor in Mathematics and three dual degree programs with the Robinson College of Business: Master of Actuarial Science, Master of Science in Information Systems, and Master of Science in Risk Management and Insurance. The departmental website describes the Bachelor’s program: “The B.S. degree program in mathematics prepares a student for positions in business, industry, and government; a career in the teaching of mathematics at the secondary level; or further study in mathematics or statistics leading to graduate degrees.”

Courses for Library Research Skills Integration
Mathematics & Statistics instruction will primarily take place in the two CTW courses required for all Mathematics & Statistics majors.

- MATH 3000: Bridge to Higher Mathematics (CTW)
- MATH 4991: Senior Seminar (CTW)

Critical Thinking Through Writing Statement
All Mathematics & Statistics majors are required to complete two CTW courses with a grade of “C” or better:

- MATH 3000: Bridge to Higher Mathematics
  Topics from set theory, real numbers, analysis, and algebra, which illustrate a formal approach to the presentation and development of mathematical concepts and proofs.
- MATH 4991: Senior Seminar
  This course introduces students to independent research in mathematics and related areas.

Standards
ACRL Information Literacy Standards for Science and Technology

Library Research Skills Outcomes Statement
A student graduated from Georgia State University with a BS in Chemistry should be able to:

1. Determine the nature and extent of the information needed
2. Acquire needed information effectively and efficiently
3. Critically evaluate the procured information and its sources, and as a result, decide whether or not to modify the initial query and/or seek additional sources and whether to develop a new research process
4. Understand the economic, ethical, legal, and social issues surrounding the use of information and its technologies and, either as an individual or as a member of a group, use information effectively, ethically, and legally to accomplish a specific purpose.

5. Understand that information literacy is an ongoing process and an important component of lifelong learning and recognize the need to keep current regarding new developments in his or her field.

Note: these outcome statements are taken directly from the ACRL Information Literacy Standards for Science and Technology, linked above.

Instructional Material/Methods

**MATH 3000: Bridge to Higher Mathematics**

MATH 3000 instruction will center on using databases to find mathematics proofs, tying into the course’s writing assignment of crafting a proof. The assignment itself does not require library research, so instruction will focus on finding published proofs for reference and comparison purposes.

- Classroom instruction
- Research guide

**MATH 4991: Senior Seminar**

MATH 4991 instruction will go into more advanced database techniques to tie into the course’s research paper assignment. The instruction will also cover how to find more basic information, as the coursework requires students to look up concepts they are unfamiliar with in math and in other subjects.

- Classroom instruction
- Consultation
- Research guide

Outcomes of Library Research Instruction

**MATH 3000: Bridge to Higher Mathematics**

Students will be able to...

- Search for mathematical proofs using JSTOR and MathSciNet.
- Filter search results and refine search strategy if necessary.

**MATH 4991: Senior Seminar**

Students will be able to...

- Pinpoint the differences between books, journal articles, and encyclopedias, and identify which to use for specific purposes.
- Identify math and science databases and determine which are appropriate for pure mathematics and multidisciplinary topics.
- Find papers related to a specific article through citation chasing and keyword searching.
- Manage references and format citations in AMS style using a citation manager.
Assessment/Check for Understanding

*MATH 3000*: Quiz administered at the end of each session (online survey or clicker), feedback after last session

*MATH 4991*: Quiz administered at the end of each session (online survey or clicker), feedback after last session

**How will we know we were successful?**

Aim for a minimum of 75% of students earning 75% or better on each quiz.

Evidence & Reflection

*MATH 3000*

At the end of each semester:

- Meet with MATH 3000 professors to discuss topics covered and what additional instruction would enhance the course.
- Review student feedback to assess student interest and what students would like covered.
- Review student performance on quizzes to identify areas that need work.

*MATH 4991*

At the end of each semester:

- Meet with MATH 4991 professors to discuss quality of student papers and content of instruction.
- Review student feedback to assess student interest and what students would like covered.
- Review student performance on quizzes to identify areas that need work.

Identifying gaps

- Continue speaking to department chair, book chair, and other professors to determine which (if any) other math classes have a writing and/or library research component.
- Talk to mathematics education professors and determine if their needs are being met by Education library instruction.
- Meet with the Writing Studio to determine what Writing Studio services Mathematics students are using and whether library instruction can address library-related issues they are having.