M.S. in Biometry Program:

Program Objectives

Biometry is the development and application of statistical methods to biological problems. At the University of Wisconsin, biometry refers to this application to problems from plant, animal and agricultural biology. (Biostatistics denotes this application to human biology.) The Biometry Program is an M.S. degree program in the field of biometry.

The Program is interdisciplinary, providing formal coursework in statistics and biology, consulting experience, and supervised research combining the two areas. Students completing the Program will understand biological processes and have the ability to apply and extend a broad range of statistical concepts and techniques to biological problems. This integration of statistics and biology is the distinguishing feature of the Program. The Biometry Program is distinct from the M.S. Statistics Program in its interdisciplinary emphasis and corresponding reduced depth in statistics. (Students interested in training with statistical consulting as the primary focus should apply for the M.S. in Statistics through the Statistics Department.)

The Program is intended for two groups of students: (1) students simultaneously working towards or intending to work towards a Ph.D. in some biological discipline and (2) non-Ph.D. students. Students who complete the M.S. in Biometry and the Ph.D. in a biological science should be at the forefront of quantitative biological research. Students who stop with the M.S. in Biometry, possibly obtaining another M.S. in a biological science concurrently, will be well suited for positions with industry or government focused on quantitative biological research.

Program Organization

Each student in the Program will have two co-advisors. One co-advisor will be a statistician (from the Statistics Department) and the other a biologist (from a biological department). For most students the statistical co-advisor will be one of the Program Faculty listed below. The biological co-advisor will come from the area of the student's biological interest. For students concurrently enrolled in a M.S. or Ph.D. program in a biological science, the biological co-advisor will almost always be the major professor from that program. The co-advisors will provide guidance to the student, approve the student's program of courses, and monitor the student's progress in the Program.

Students pursuing the degree requirements full-time should be able to complete the Program in two years. Students working simultaneously towards two degrees may require more time. It is expected that all enrolled students will complete the Program within three years.

The Biometry M.S. Program is directed and administered by the Biometry Program Faculty. Each of these faculty members (listed at the end of this document), has a joint appointment in the Department of Statistics and a biology department. In addition to providing general direction for the program, as a group these faculty members also screen and coordinate admission of students into the Program, arrange for an Advisory Committee for each entering student, and rule on appeals brought to them regarding degree requirements.
Program Requirements

A) General

Graduate School entrance, residence and general requirements must be fulfilled. Specific requirements are listed below. The background courses in biology are a bare minimum; it is anticipated that almost all successful applicants will have a strong background in some area of biological science. Under extenuating circumstances, students may appeal to the Executive Committee for exemptions to prerequisites or requirements.

B) Prerequisites

1. Undergraduate calculus (Math 221, 222, and 234 or equivalent).
2. Course in statistics (For/Hort/Stat 571 and 572 or equivalent one year sequence).
3. Background courses in biology (e.g. Bot 130, Zool 101 & 102, Biology 151 & 152).

C) Required coursework

Each student must complete 26 credits of required courses as enumerated in the four categories below. Courses used to satisfy requirements must be taken for a letter grade and passed with a grade of B or higher. A minimum of 9 of the 26 credits must be completed while enrolled in the Program.

1. Eight credits of Intro Math Stat (Stat 309-310 or 311-312, or equivalent one-year sequence).
2. Six credits in Statistics courses numbered above 600 (excluding 641, 698, 699, 756, and 990).
3. Three additional credits in Statistics courses numbered above 325 (excluding 371, 431, 571, 572, 698, and 990). Credits from suitable quantitative courses taught in other (non-biological) departments (e.g. Mathematics) may be substituted.
4. Nine credits in biological courses numbered 300 or above (excluding introductory statistics courses and research) so that: at least 6 credits are taken in a single discipline or in closely related disciplines, and a maximum of 3 credits are obtained in statistically oriented courses (e.g. MAS 610, Agron 770 or Agron 811).

D) Consulting experience

Students must complete 2 credits of Statistics 699 (Directed Study -- S/U grade) by consulting in the CALS Statistical Consulting Service. (These credits cannot be used for meeting requirements in section C.) This consists of supervised consulting and will provide exposure to statistical issues surrounding a broad range of problems in biology, provide awareness of practical issues such as experiment management, data collection, data recording, etc., and provide experience assisting others in designing experiments and analyzing data. One credit is roughly equivalent to a single project that can be completed in one semester, and involves about 20-30 hours of effort, including meetings with consulting clients, background research, data analyses, etc.
E) Biometry project

Each student must complete a project that represents an original contribution to biometry. Examples of such contributions may include a novel analysis of some interesting biological data, the creation and evaluation of a useful experimental design, or the development and/or comparison of statistical methods. The project results are to be presented in a manuscript with emphasis on the integration of statistics and science. The manuscript should be of a quality that can lead to a publication. Normally this requirement will be formalized by enrolling in three credits of "Research" (e.g. Hort 990) in the department of one of the co-advisors. (These credits cannot be used for meeting requirements in section C.) For a student seeking a double M.S., a joint thesis would satisfy this requirement.

F) Final oral examination

Upon completion of course work and project, a three-member committee composed of the student's co-advisors plus an additional faculty member from Statistics will examine the student orally. This examination will cover the student's project and course work. For a student seeking a double M.S., a combined examination is acceptable. If failed, the oral examination may be repeated once.

At least three weeks prior to the final oral exam, you must fill out an MS Warrant Form with the Graduate Coordinator in Statistics. She will email you when the MS Warrant is ready for pickup a few days before the final oral exam.

G) Requirements for students seeking more than one degree

1. Students seeking two M.S. degrees (both research degrees) must recognize Graduate School requirements that at most 25% of the credits used for one degree can be applied towards the other. Students pursuing a professional degree may seek a Biometry M.S. but may not use courses required for a professional degree to count towards the Biometry M.S. degree.

2. There are no Graduate School limitations on applying credits towards both a M.S. and a Ph.D. degree. Credits used to satisfy the Biometry M.S. can also be used towards satisfaction of requirements for a Statistics minor, subject to approval by the appropriate minor certification committees. It should be noted that the Graduate School will not grant dissertator status on the Ph.D. program until completion of the Biometry M.S. degree.

Program Admissions and Financial Support

Prospective students may apply for admission to the Biometry Program without application to any other program. Prospective students may also apply simultaneously with application to another program or after admission into another program. It is anticipated that most students enrolled in the Biometry Program will be enrolled concurrently in another program.

If a student is already enrolled in the Graduate School, follow the instructions here. Instructions for Adding Biometry Major
Other interested applicants not already enrolled in the Graduate School at UW should submit the following:

1. Application to the Graduate School or the appropriate addition of major form.
2. Transcripts from all previous post-secondary schools attended.
3. A 1-2 page statement of purpose indicating your reasons for applying to the Biometry M.S.
4. A minimum of two letters of recommendation.
5. Identification of two co-advisors, one statistical and one biological (see below).

The Program Faculty will evaluate applicants on the basis of academic achievement and promise, cooperative work skills, communication skills, and the perceived potential for success in the Program. For prospective students who intend to pursue another program concurrently, the Biometry Program will seek a good fit between the two programs. Acceptance of a prospective student by a statistical and biological co-advisor, who should be identified at the time of application, is necessary for admission into the Program and input from prospective co-advisors will be sought in the admissions process.

It is expected that most students will be supported through a biological department or program or with their own funds. Opportunity for financial support through the Biometry Program is extremely limited. A particularly outstanding student can be considered for a Graduate School Fellowship upon recommendation from the Biometry Program Executive Committee. On rare occasions, a student with strong quantitative background may be able to obtain support as a teaching assistant in Statistics.

**Program Faculty**
Cécile Ané, Botany
Murray K. Clayton, Plant Pathology
Bret Larget, Botany
Brian S. Yandell, Horticulture
Jun Zhu, Director, Entomology

For additional information about the Program, please contact:

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