There are academic and administrative steps involved in earning a degree from the interdepartmental, interdisciplinary Master of Statistics Program, Biostatistics Track. The Graduate School and the Master of Statistics Program have specific requirements. In addition, the Biostatistics Track is situated in the Department of Family and Preventive Medicine, Division of Public Health, and the Division has specific requirements. This document outlines the academic requirements and procedures. This document is subject to change without notice.
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Brief Introduction to MStat Program

History

The Master of Statistics program is an interdepartmental, interdisciplinary program at the University of Utah. Begun in 1976, this is arguably the oldest program of its kind still on campus. The program awards an MStat, which is a professional, non-thesis degree in statistics. It is administered by the University Statistics Committee, by agreement with the chairs of participating departments. Current tracks (participating departments) are Business (college-wide), Biostatistics (Family and Preventive Medicine), Econometrics (Economics); Educational Psychology, Mathematics, and Sociology.

Graduates of the Master of Statistics program have gone on to doctoral study and faculty roles at this and other universities; positions such as vice-presidents of health care corporations; and pharmaceutical company leadership; as well as roles as statistical analysts and consultants at this university and elsewhere.

Mission

The MStat program’s primary goal is to prepare students for statistical consulting roles in industry. It is for those students whose primary interest lies in statistical methods in the specified disciplines. Graduates have grounding in the intermediate theory of statistics; track-specific applications; related software; team participation; communication/consulting skills; and the abilities to translate real-world problems into statistical models, to think through a statistical analysis that responds to the real-world problem, and to communicate the results to the appropriate audience.

Biostatistics Track

The MStat in Biostatistics is housed within the Division of Public Health at the Department of Family and Preventive Medicine, in the School of Medicine. The goal of this track is to provide the student with a good foundation in the basics of applied statistics, the fundamentals of numerous problems in the areas of health, an ability to apply statistical knowledge to health-related data, an ability to understand the problems and deal with the personalities of health care personnel, and an ability to use computers to good advantage. For well-prepared students, this is a two-year program. Students with less preparation will need to extend their time in the program. In addition, many MStat students are part-time, as they also have a full-time job or family responsibilities.

As a track in an interdepartmental program, the track leadership is rotated among track faculty, approximately annually. There is a Biostatistics Director in the Division of Public Health, who assists to coordinate between the Public Health programs and the Biostatistics track.
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Consult the Academic Advisor for the Master of Statistics Program, Biostatistics Track, (375 Chipeta Way, Suite A), if you have further questions.

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Admissions Criteria

MStat Program Admissions Criteria

Minimum requirements for admission:

1. Bachelor’s degree from an accredited college or university with at least a cumulative 3.0 GPA

2. Two semesters of calculus, evidence of multivariate calculus, two semesters of biology, programming language, knowledge of matrix theory, and at least two semester courses in basic statistics.

Application for admission to the MStat Program is made through the Graduate School. Although the Track and the MStat Program can recommend admission, only the Graduate School can formally admit a candidate.

Two months in advance of the semester for which you are applying, submit the following through Apply Yourself (https://app.applyyourself.com/?id=utahgrad). (You may check your status at any time at the same web address).

International applicants must also include official TOEFL scores. The International Admissions Office requires at least iBT 80 or pBT 550, or an IELTS score of at least 6.5.

For admission to some tracks (but not Biostatistics), students must also take the GRE or GMAT prior to applying for the Master of Statistics Degree Program.

Additional Biostatistics Track Admissions Criteria

Admissions to the Biostatistics Program are highly competitive. Admissions decisions will be based on an evaluation of the individual’s application.

1. Prerequisites for the Biostatistics Track: all the general MStat requirements, plus:
   a. Bachelor’s degree from an accredited college or university- at least a cumulative 3.0 GPA
b. 2 semesters of undergraduate statistics (applied or theoretical, e.g., Math 3070-3080, Math 5010, Math 5080, FPMD 6100, etc.)
c. 2 semesters of undergraduate biology
d. 2 semesters of undergraduate calculus
e. Evidence of Multivariate Calculus
f. Knowledge of a programming language
g. Knowledge of matrix algebra (e.g., Math 2270)

Students who have not completed all of the prerequisites may be rejected. B- or better is required in all prerequisites. Failure to meet these prerequisites will require explanation for the file to be considered further. See probationary admissions policy below.

The programming language is to be a real programming language, not statistical software or a database. However, the faculty will consider an application in which the student demonstrated that they can program macros in SAS, Stata or R, in lieu of the programming prerequisite. The prerequisite of ‘knowledge of a programming language’ requires documentation that goes beyond personal assertion. This could be a course documented in a transcript; a letter from a knowledgeable faculty member or reference person who knows that the candidate knows/has experience with a specific programming language; a copy of a certification or certificate of completion; or other concrete documentation of knowledge of that programming language. The prerequisite of knowledge of matrix algebra is similar.

2. The transcripts from all colleges and universities attended, submitted directly to the University of Utah Admissions Office

3. TOEFL scores for international students- at least iBT 61 or pBT 500, or an IELTS score of at least 5.0 submitted through Apply Yourself

4. Three letters of recommendation submitted through Apply Yourself

5. Personal statement of objectives and goals – not to exceed 1000 words; submitted through Apply Yourself.

6. Potentially a personal interview after application is approved for interview, including international applicants. In order to accommodate applicants who come from a significant distance, personal interviews can be arranged at a mutually convenient time. Telephone interviews may be conducted and will be considered on a case-by-case basis. Any waiving of the personal interview is at the sole discretion of the Biostatistics Track Faculty.

The GRE is not required in the Biostatistics track at this time, but if you have the scores, you may submit them.

Only courses with a grade of B- or better may be transferred into the program. Students who took MStat in Biostatistics core courses prior to admission to this program and received a grade lower than a B- must repeat them.

The Biostatistics Program admits students for Fall semester and Spring semester each year. The ‘priority’ deadline for Fall admission is February 1. Complete applications received by the Biostatistics program by February 1 will be considered by February 15. The regular deadlines for Fall admission and Spring admission are April 1 and October 1, respectively. Applications received by these timeframes will be considered if the class is not yet full. Applicants must complete their file prior to the deadline.
Probationary Admission Policy

This policy is experimental in 2012 and is subject to review in May of every year.

1. Students are not eligible for probationary admission unless, as assessed by the admissions committee, they are otherwise strong candidates with a strong chance of MStat/Biostatistics program completion. This includes evidence that the student can do 1) calculus and 2) statistics. The admissions committee will make these decisions conservatively, on a case-by-case basis.

An applicant cannot be considered for probationary admission unless they have a bachelors from an accredited university (or will have it by the start of their first semester); a GPA of at least 3.0; and grades of B- or better in 2 semesters of calculus and 1 semester of statistics, or 1 semester of calculus and 2 semesters of statistics.

2. Probationary admission must include a plan for completion of the missing prerequisites. The admissions letter will state these conditions and also that the student should expect to spend three years in the MStat program.

3. Students may receive probationary admission in summer semester, fall semester, or spring semester, as recommended by the admissions committee.

4. Students admitted on a probationary basis must focus on taking the missing prerequisites immediately. They may take required courses for the MStat program after they have completed all the prerequisites for that course with a grade of B- or better. For example: Math 5010 may be taken as soon as the person meets the Math department’s prerequisites for this course. However, students must complete the matrix algebra and programming language requirements prior to taking FPMD 6106-6107.

5. The student and advisor will work together to ensure that the requirements of probation are met in the specified timeframe. When all prerequisites are completed, the student will write a letter to the Biostatistics Faculty, signed by the advisor, reporting grades of all prerequisites and petitioning to be taken off probation.

6. Students receiving less than a B- in any *single* prerequisite during this probationary admission period will be allowed to stay in the probationary program for one additional semester (counting summer), and to try to improve their grade in that prerequisite or take another course to apply to the prerequisite.

7. Students receiving less than a B- in *two* of the (missing) prerequisites during this probationary admission period, or for the same prerequisite twice, will be reviewed for grounds for dismissal from the program.

8. During the probationary admission period, the student may opt to take additional, non-required courses such as ESL, Calculus III, additional programming languages, database courses, other mathematics (non-statistics) courses, or additional biology, genetics, and medical terminology. Grades in such courses will not jeopardize their probationary status. They may choose to take courses at the community college, such as programming languages, but they must meet any minimum enrollment criteria (e.g., International Student criteria) according to UU rules.
9. If at the end of the 12 month probationary admission period, the person has not met all of the MStat/Biostatistics prerequisites, they will be reviewed for grounds for dismissal from the program.
Academic Life

Day-to-Day

Location: The Biostatistics Track is housed within the Division of Public Health in the Department of Family and Preventive Medicine (DFPM or FP MD) in Research Park, at 375 Chipeta Way Ste A. This is off Foothill Blvd. at the southeast corner of Wakara Way and Chipeta Way. An interactive campus map is available at: http://www.map.utah.edu/index.jsp. Parking is free west of the building, or a person may take the campus shuttle (http://www.parking.utah.edu/shuttles/) or some Utah UTA buses (http://www.rideuta.com/). The University has arranged for students to have UTA and TRAX passes. (http://www.parking.utah.edu/UTA/index.html.) Students MUST have a University ID. If students need to park elsewhere on campus, permits are required (http://www.parking.utah.edu/). There are also a few pay parking lots. A color map of parking lots is available at: http://www.parking.utah.edu/maps/index.html

Bike riders are advised that there is an elevation gain from main campus to the Health Sciences Center, including Research Park.

A DFPM receptionist is available at the middle door from the parking lot. The Public Health receptionist is available through the door just north of the south bay elevator. Biostatistics students are encouraged to participate in activities sponsored by the MStat Program, the Division of Public Health, and DFPM, in addition to other appropriate activities elsewhere on campus.

Classrooms and conference rooms are in the lower level of the south bay (room 124 and 125) and on the lower level (room 108) and first floor levels (PH classroom, PH conference room, and room 220) of the middle bay. There is a small computer lab in the lower level area of the middle bay, near the Physician Assistant Program. Study areas are near the vending machines and just inside the south bay. There is an elevator and wheelchair ramp in the south bay.

Books: Books for FP MD classes will be available at the Health Sciences bookstore located in the Health Sciences Education Building (HSEB), which also houses the Department of Biomedical Informatics. Books for courses on main campus, such as Math 5080, are available at the main campus bookstore. (http://www.bookstore.utah.edu/utah/home.aspx.) Some books are purchased online.

Lunch: Within the classroom building at 375 Chipeta Way, there are vending machines, a refrigerator for Public Health and MStat Students, and a microwave. The Red Onion, and Allie’s Restaurant (inside the Marriott Hotel), are just west of the building on Wakara Way; the Chase Peterson Heritage Center has a number of helpful services, including meals. The Medical School/University Hospital has a cafeteria on the A level. Primary Children’s Medical Center, and the Huntsman Cancer Institute (‘The Point’), and the Williams (Pediatrics) Building all have cafeterias. There is a ‘Corner Bakery’ on Foothill Blvd at Wakara Way. Students are also welcome to bring lunch and eat near the vending machines or on the patio on the lower level.

Knowledgeable people: The DFPM and PH receptionists can answer many general questions about what is happening in the department or the division, where to go to lunch, etc. The Biostatistics Track Academic Coordinator is an expert on academic policies and procedures. One’s advisor can provide excellent advice on how to succeed in the program and as a statistician. The Biostatistics Director and the Biostatistics Track representative can help to interface with the MStat program and the PH Division on matters which go beyond what the track administrator or advisor can solve. A great deal can be learned by simply talking with other students, who have often been in similar situations.
Resources for International Students:
International Center - http://ic.utah.edu/
International Teaching Assistant (ITA) Program - https://gradschool.utah.edu/ita/
English as a Second Language (ESL) – http://www.linguistics.utah.edu
Writing Program – http://hum.utah.edu/uwp/
English Language Institute (ELI) - http://continue.utah.edu/eli
ASUU Tutoring Center – http://tutoringcenter.utah.edu

In order for Master of Statistics, Biostatistics faculty members to write letters of recommendation, students must fill out this form that gives their advisor permission to discuss and release academic information to their employers. Here is a link to the form http://leap.utah.edu/docs/ltr_recom.pdf

Guidelines for Use of Social Media

“Use of social media is prevalent among students. Students should be aware that unwise or inappropriate use of social media can negatively impact educational and career opportunities. To avoid these negative impacts, students should consider the following:

• Post content that reflects positively on you and the University. Be aware not only of the content that you post, but of any content that you host (e.g., comments posted by others on your site). Content you host can have the same effect as content you post.

• Though you may only intend a small group to see what you post, a much larger group may actually see your post. Be aware that your statements may be offensive to others, including classmates or faculty members who may read what you post.

• Employers and others may use social media to evaluate applicants. Choosing to post distasteful, immature, or offensive content may eliminate job or other opportunities.

• Once you have posted something via social media, it is out of your control. Others may see it, repost it, save it, forward it to others, etc. Retracting content after you have posted it is practically impossible.

• If you post content concerning the University, make it clear that you do not represent the University and that the content you are posting does not represent the views of the University.

• Make sure the content you post is in harmony with the ethical or other codes of your program and field. In certain circumstances, your program may have made these codes binding on you, and violations may result in action against you.

• If you are in a program that involves confidential information, do not disclose this information. The University may take action against you for disclosures of confidential information.

• Realize that you may be subject to action by the University for posting or promoting content that substantially disrupts or materially interferes with University activities or that might lead University authorities to reasonably foresee substantial disruption or material interference with University activities. This action may be taken based on behavioral misconduct, academic performance, academic misconduct, or professional misconduct, and may range from a reprimand or failing grade to dismissal from a program or the University.” University Policy 11 18 2010
General Statement Regarding Social Media

“Many students use various forms of social media, including but not limited to wikis, blogs, listserves, fora, websites, and social networking sites. Facebook, MySpace, and Twitter are specific and frequently-used examples of these media. When using social media, students are expected to act with courtesy and respect toward others.

“Regardless of where or when they make use of these media, students are responsible for the content they post or promote. Students may be subject to action by the University for posting or promoting content that substantially disrupts or materially interferes with University activities or that might lead University authorities to reasonably foresee substantial disruption or material interference with University activities. This action may be taken based on behavioral misconduct, academic performance, academic misconduct, or professional misconduct, and may range from a reprimand or failing grade to dismissal from a program or the University.

“Prior to taking any action against a student based on this policy, departments are asked to consult with the Office of General Counsel (801.585.7002).” University Policy 11 18 2010

Getting a Degree in the United States

American students, staff, and faculty are generally friendly, helpful, and respectful to international students. Most people call each other by their first names. Some faculty prefer to be called ‘Professor’ or ‘Doctor’, and some students prefer to be called a name other than their first name. Usually, this is addressed when two people first introduce themselves to each other, or on the first day of a class.

It is appropriate for a student to ask questions candidly about anything that they may need. Although there are many resources for international students at the University of Utah, sometimes the best source of information is another student, as many questions are the same for all students, not just international students.

The University of Utah International Center has many web resources and friendly, knowledgeable staff, who can assist international students on almost every aspect of living in, and getting a degree in, the United States. (http://www.sa.utah.edu/inter/) In addition, the Office of Student Affairs has links to a variety of additional resources for students, including a career center (http://www.sa.utah.edu/).

The Master of Statistics degree is geared toward producing graduates who will be independent statistical consultants or go on to advanced study in the United States. The MStat is also geared toward PhDs in other fields who want Masters-level skills in statistics. The degree to which an MStat graduate functions independently depends on academic success, maturity, any additional training, and the environment within which the statistician practices. The environment differs in academic vs. industrial settings, and to some extent, in different countries and cultures. Students in the MStat in Biostatistics program are being prepared for roles in medical, pharmaceutical, and health services research in academia and industry in the United States. Some international students have reported that the degree of independence expected of them in the MStat in Biostatistics program is different from what they might anticipate in their own country, or when working with professionals from their own culture. This also happens, on occasion, for some students who have a terminal degree, (i.e., the usual and final degree in a discipline) in another field. Some of these students have also reported that the degree of independence expected of them in the MStat in Biostatistics program is different from what they might anticipate in their previous discipline. One’s advisor and instructors can be helpful in thinking through this sort of question about matching professional expectations to the academic or work environment.
Degree Requirements

1) General Requirements

Progress and Evaluation

Certain general policies with respect to advising and periodic evaluation of student progress apply to all students in the MStat-Biostatistics Program. For new students, an academic advisor is assigned to guide the student in their academic program. Students should meet with their academic advisor early in the beginning of the first semester, or prior to first semester when possible, to outline their coursework and review their academic goals. Furthermore, students should meet with their academic advisor each fall and spring semester to review progress and goals. It is the student’s responsibility to meet with their academic advisor on a regular basis.

All students are assigned an initial faculty advisor. The initial faculty advisor will help the student with any questions they might have about the program; discuss possible elective courses; possibly help with practicum selection and potentially chair the student’s supervisory committee (see below). Once the student has formed their committee, the chair of the committee is the new faculty advisor. The faculty advisor approves the student’s academic program and all electives. If a graduate student's preliminary work is deficient, the faculty advisor may require supplementary undergraduate courses for which no graduate credit is granted. It is possible, though uncommon, to change initial faculty advisors, and this can be done with the approval of the Biostatistics Track faculty, as it requires them to shift workloads. The best time to change initial faculty advisors is at the time of formation of a formal supervisory committee. Also, students should feel free to discuss topics of interest with other faculty members, within and outside of the MStat-Biostatistics Program, who may be of help or who are interested in a particular applied area.

Supervisory Committee

A supervisory committee is a critical component of each student's graduate study. The supervisory committee is responsible for approving the MStat-Biostatistics project proposal, reading and approving the project report, and administering and judging the final oral examination. The final oral examination may be chaired by any member of the supervisory committee consistent with departmental policy. Decisions concerning examinations and project approval are made by majority vote of the supervisory committee.

For all students, three committee members are necessary. The committee chair must be from the MStat-Biostatistics Program Faculty. At least two of the members must be faculty of the MStat-Biostatistics Program.

It is the responsibility of the student to approach prospective committee members with a view to their willingness and availability to serve in such a capacity. The faculty has the right, for justifiable academic and/or administrative reasons, to decline to serve on a student's supervisory committee.

Supervisory committees are generally formed early in the third full semester. To establish a supervisory committee, the student is responsible for completing the Request for Supervisory Committee Form (http://www.gradschool.utah.edu/students/forms/supervisory.pdf), having each member sign, having the Director of the MStat Program (all tracks) sign, and turning in a copy to the Biostatistics Track Academic Coordinator to be processed. After the supervisory committee form is filed, the student should file the Candidacy form as soon as possible (see below.) Deadlines are posted on the MStat website.

Please refer to the Graduate Handbook for further information on supervisory committees.
After the supervisory committee form is filed, the student should complete the Faculty/Student Worksheet as soon as possible. The Faculty/Student Worksheet, signed by the supervisory committee chair, is required by the Division of Public Health and is used as the checklist of items which must be completed in order to allow a student to graduate. You can get the worksheet from the Biostatistics Track Academic Coordinator.

Once the form is signed and approved by the supervisory committee chair and the MStat program director, the student should give the original to the Biostatistics Track Academic Coordinator. This form constitutes a contract of graduation requirements.

Minimum Grades

Candidates for graduate degrees at the University of Utah are required to maintain a 3.0 or higher GPA in course work counted toward the degree. In addition, departments may set minimum grade requirements for a course to count towards a specific degree. (http://web.utah.edu/graduate_school/ghgrades.html)

A failing grade for any course in the MStat-Biostatistics Program is a final grade below a B-. These courses will not be counted toward graduation in the MStat in Biostatistics program. This includes core courses taken in other departments, such as Math 5010-5080-5090 and elective courses.

Failure in a core course means the student has not demonstrated competence in a discipline necessary for success within the Program. For these reasons, the following action is recommended:

1. Students who receive a grade lower than a B- in a core course are on probation. The student will be notified in writing that he or she is on Departmental probation.

2. These students will be allowed to retake the core course one more time and they must pass the course with a grade of B- or better. A grade of B- or lower on the second attempt will be grounds for dismissal. The student will be permitted to take other Program courses for which the core course is not a prerequisite. However, students will not be permitted to count toward MStat graduation more than 15 hours after this failure occurred, before retaking the core course.

3. A student who fails two core courses will not be permitted to count any further courses toward MStat graduation until he or she has retaken both courses and received grades of B- or better. International students are cautioned that this may affect their status.

4. Two grades lower than a B- in elective courses will be grounds for dismissal.

Actions arising from this policy may be appealed by the student using the appeals process outlined by the University of Utah – Appeals of Grades and Other Academic Actions.

2) Policy on Courses and Registration

Course Numbers

Courses numbered 6000 and above are considered graduate-level. Courses numbered 5000 to 5999 can count toward graduate degrees. Courses numbered 3000 to 4999 are upper-division (junior and senior) courses. Those numbered 1000 to 2999 are lower-division (freshman and sophomore) courses.

Credit/No-Credit Policy

The intent of the CR/NC option is to free students to extend their studies to areas outside their major or specialty and to take classes they otherwise might not take if they had to compete with majors for a letter grade. The following applies to taking classes CR/NC:
1. During the first year in The Graduate School of the University of Utah, the student, if the department concurs, may register for one class each semester on a CR/NC basis.

2. Of the first year’s work, courses taken for CR/NC grades may not exceed approximately 25 percent of the student's total credits and generally should be less than 25 percent. In some cases, especially if the student plans to do doctoral work, the director of graduate studies or advisor may determine it is desirable that all classes the first year be taken for letter grades. If so, the program should be outlined accordingly.

3. After the first year in The Graduate School, the student may request permission from the appropriate director of graduate studies to register for more than one class per semester on a CR/NC basis.

4. Students may not elect to register for CR/NC courses for core MStat-Biostatistics Program courses unless a course is offered only on a CR/NC basis.

5. All courses earning credit of one hour are graded on a CR/NC basis, unless use of regular letter grades is approved by the Graduate Council.

6. Students should earn a grade of B- or better to be entitled to credit. Students who do not wish to register for credit, either for a letter grade or CR/NC, should audit the course.

7. Students enrolled in a class for CR/NC may change to a letter grade any time before the Monday of the last week of classes. Graduate students are cautioned that it is important they receive letter grades in order to build a graduate GPA. This is especially important if students apply for fellowships or traineeships on a competitive basis or later transfer to another institution.

**Petition for Graduate Credit**

MStat-Biostatistics Program students may be allowed to designate certain graduate-level courses (5000 level and above) which they took while enrolled as an undergraduate student, to be counted for graduate credit. Such graduate credit is limited to six semester hours or two courses. Credit used to earn the undergraduate degree may not be counted toward a graduate degree. Students are required to seek advance approval of the student’s supervisory committee and the Dean of the Graduate School on an **Undergraduate Petition for Graduate Credit** form, available in the Registrar's Office and on the Graduate School webpage under "Online Forms". However, if a student seeks retroactive graduate credit for courses taken as an undergraduate, permission may be granted only if a grade of B or better was earned in the specified courses and if the courses were taken no more than three years prior to the petition.

**Transfer of Credit**

Graduate credit may be transferred from other institutions. Similar core and required graduate-level courses taken at other colleges and universities will be reviewed on a course by course basis. The student’s advisor will review the syllabus from the other institution to determine if the course is acceptable as a transfer course.

Credits transferred from another institution may be used for only one University of Utah degree. Up to six semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if they (1) are of high letter grade (A, A-, B+ or B; credit only grades are unacceptable), (2) are recommended by the student’s supervisory committee, and (3) are taken within the prescribed time limit.

**Non-Matriculated Credit**

The Graduate School allows up to nine semester credit hours from non-matriculated coursework at the University of Utah, which were not applied to another degree, to be applied towards a degree. It must be approved by the student’s supervisory committee. Applying more than nine hours of non-matriculated work to the degree requires approval of the Dean of The Graduate School. Students should check with the International Office to determine if they are eligible for non-matriculated courses.
Furthermore, the Graduate School allows a maximum of six credit hours from relevant coursework outside of the University of Utah. From the Graduate Handbook:

“Graduate credit may be transferred from other institutions. Credits transferred from another institution may be used for only one University of Utah degree. Up to six semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if they (1) are of high letter grade (A or B; credit only grades are unacceptable), (2) are recommended by the student’s supervisory committee, and (3) are taken within the prescribed time limit.”

However, these courses must be approved by the student’s supervisory committee and cannot be credit hours that were counted toward another degree.

**Scholarly Integrity**

Work toward the MStat degree must be a student’s own. The work of others must be properly cited and used with permission, within the boundaries set by the instructor of each class. Students must learn and abide by the University of Utah’s policies concerning plagiarism.

**Minimum Continuous Registration**

All graduate students must maintain minimum registration from the time of formal admission through completion of all requirements for the degree they are seeking unless granted an official leave of absence (see Leaves of Absence, below). Students not on campus and not using University facilities are not expected to register for summer semester. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, their supervisory committee is terminated and their records are inactivated. To reactivate a file at a later time, the student is required to reapply for admission to The Graduate School.

MStat-Biostatistics students maintain minimum registration by registering and paying applicable tuition and fees for at least three credit hours per semester during the academic year from the time they are admitted to The Graduate School until they have completed all requirements for the degree, including the submission of a final paper or project.

Minimum continuous registration requirements apply to MStat candidates until the final paper or project is submitted and approved by the department. Students who take their last examination after the final examination period and before the next semester begins are not required to register for the next semester. They will graduate the semester all Graduate School requirements are fulfilled. Master's degree students maintaining minimum continuous registration have library privileges, health insurance options, and access to athletic facilities.

**Summer Term Registration**

Continuous registration refers only to registration during the regular academic year and is not terminated or interrupted by non-registration during summer term. Students should, however, maintain registration status during summer term if they are taking examinations.

International Students Vacation Semester: During your vacation semester, you may register for less than full time credit hours and legally remain in the U.S. You must inform the International Center within the first 15 days of the semester that you are taking a summer vacation semester so we can verify you are eligible for a vacation semester and report it to the USCIS. Otherwise, a hold will be placed on your student record and you will be reported to the USCIS as being out of lawful status. Summer semester is not automatically a vacation semester. You must attend school full time for two consecutive semesters before you are eligible for a vacation semester. The only exception is if you entered the U.S. to attend
Spring Semester as your first semester, then you may take the first Summer Semester as a vacation semester. You are required to return to school after your vacation semester.

**Maximum Hours**

No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. A schedule of nine credit hours is considered a full load for graduate degree candidates.

Candidates electing to register for 17 credit hours or more must file a formal petition to the Dean of Graduate Studies. This petition must include:

1. A completed petition form;
2. Two letters of support from their committee members; and
3. An approval letter from the MStat Program Director.

**Leaves of Absence**

Students who wish to discontinue their studies for one or more semesters (other than summer term) must file a Request for Leave of Absence form with the Chair of their supervisory committee.

Before being forwarded to the Graduate Records Office for approval by the Dean of The Graduate School, the form must be approved by the supervisory committee Chair and Department Chair.

Requests may be granted in the following circumstances:

1. Leaves of absence generally are granted and reviewed on a yearly basis for reasons relating to illness, military service, pregnancy and/or child care, residence outside the state of Utah, and work in process in which students are not in continual contact with their supervisory committee or other members of the faculty.
2. Leaves also may be granted on a yearly basis to students who, in the judgment of their department chair, are engaged in work considered beneficial to their academic goals, such as temporary teaching or professional employment that allows the student ultimately to complete the degree.
3. Leaves for other reasons may be granted and reviewed on a yearly basis when the student's chair believes the leave is in the best interest of both the student and the University.

Students must apply for leaves of absence for a current semester by the last day of classes of that semester. They also must officially withdraw from classes in any semester for which a leave is granted. Failure to withdraw formally results in the reporting of E or EU grades for all classes. For more information about official withdrawal, see Grading Policies in the Undergraduate Information section of this catalog.

The period during which a leave of absence is granted does not count toward the period allowed to complete the degree. Leaves are granted for a maximum of one academic year at a time. The leave of absence is void if a student registers for classes in a semester for which a leave was granted.

**Full-time Status**

Graduates considered full time if they:

1. are registered for 9 or more credit hours; and
2. after the residency requirement has been met (two consecutive semesters of nine hours or more), are registered for three credit hours of FPMD 6970. *Option 2 does not fulfill state residency requirements.*

**Tuition Differential**

The Biostatistics track of the MStat program is situated within the Division of Public Health, and so, since 2008, the public health tuition differential applies to Biostatistics students as well.
Tuition fees for residents and non-residents can be found http://fbs.admin.utah.edu/index.php/tuition. Public Health tuition includes a differential fee. IMPORTANT: Under the heading ‘Graduate’, please make sure you select ‘Division of Public Health’ not the regular Graduate tuition. Also see: Resident - http://fbs.admin.utah.edu/download/income/Graduate/PHGraduateRes.pdf Non-Resident - http://fbs.admin.utah.edu/download/income/Graduate/PHGraduateNRes.pdf Tuition is subject to change without notice.

**Tuition Waivers**

If a student works for pay on campus, the department in which they are paid can assist them to obtain a partial or full tuition waiver. For more information, students should contact the Public Health Office Manager.

**3) Course Requirements**

**Coursework:** Credit hours must total at least 38 credit hours.

**Core courses:** must total 30 credits.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 5010</td>
<td>Introduction to Probability</td>
<td>3</td>
<td>Math 2210 or 1260 (Calculus III)</td>
</tr>
<tr>
<td>MATH 5080</td>
<td>Statistical Inference I</td>
<td>3</td>
<td>Math 5010</td>
</tr>
<tr>
<td>MATH 5090</td>
<td>Statistical Inference II</td>
<td>3</td>
<td>Math 5080</td>
</tr>
<tr>
<td>FPMD 6106</td>
<td>Categorical Data Analysis (offered alternate years)</td>
<td>3</td>
<td>MStat/Biostat prerequisites; Math 5080, Math 5090 (concurrent enrollment or instructor permission)</td>
</tr>
<tr>
<td>FPMD 6107</td>
<td>Survival Analysis (offered alternate years)</td>
<td>3</td>
<td>MStat/Biostat prerequisites; Math 5080, Math 5090 (concurrent enrollment or instructor permission)</td>
</tr>
<tr>
<td>FPMD 6300</td>
<td>Epidemiology</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>FPMD 6307</td>
<td>Biostatistics Seminar I (must be taken first year)</td>
<td>1</td>
<td>Instructor Permission</td>
</tr>
<tr>
<td>FPMD 6308</td>
<td>Biostatistics Seminar II (must be taken second year)</td>
<td>1</td>
<td>Instructor Permission</td>
</tr>
<tr>
<td>STAT 6869</td>
<td>Advanced Methods in Statistics (Capstone) (offered each spring)</td>
<td>3</td>
<td>Completion of all other coursework, particularly Math 5010-5080-5090</td>
</tr>
<tr>
<td>STAT 6969 or STAT 6003</td>
<td>Special Topics in Statistics</td>
<td>3</td>
<td>Varies</td>
</tr>
</tbody>
</table>
**Additional Required Courses:** must total 6 credits.

<table>
<thead>
<tr>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course #</strong></td>
</tr>
<tr>
<td>Math 6010</td>
</tr>
<tr>
<td>Math 6020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course #</strong></td>
</tr>
<tr>
<td>FPMD 7120</td>
</tr>
<tr>
<td>FPMD 7130</td>
</tr>
</tbody>
</table>

**Electives:** Technical elective(s) approved by advisor, must total at least 2 credits.

**Suggested Electives**

There are many possible statistics-related courses in the Public Health Programs, departments housing other tracks of the MStat program, and elsewhere on campus. The MStat Program website has a list of such courses. Some examples are:

- FP MD 6101 (3): SAS Programming
- FP MD 7110 (2): Methods of Clinical Trials
- FP MD 7140 (3): Applied Multivariate Statistics
- STAT 6969-091 (2): Nonstatistical Aspects of Clinical Trials for Statisticians
- FP MD 7300 (3): Epidemiology II
- FP MD 6311 (3): Public Health and Clinical Research Methods
- FP MD 6730 (3): Quantitative Risk Assessment
- MATH 5040 (3): Stochastic Processes
- MATH 6070 (3): Mathematical Statistics
- OIS 6450 (3): Simulation of Business Processes
- OIS 6425 (3): Six Sigma for Managers
- ED PS 7300 (3): Psychometric Theory

**Waivers and Substitutions:** Waivers and substitutions must be approved by the student's advisor. If changes are made after the Candidacy form is filed, changes must be requested of the Graduate School by the advisor.

**Comprehensive Examination:** A Comprehensive Examination is not currently required in the MStat-Biostatistics Program.
4) IRB Requirements

The Institutional Review Board (IRB) is the committee which safeguards the ethics of all research on human subjects at the University of Utah, including MStat projects. The IRB does this by receiving and reviewing an application by each project and making a determination, such as 'approved', 'exempt', or 'not human subjects research'.

All MStat in Biostatistics students must fill out a University of Utah IRB application for their MStat project, and sometimes the practicum (see below), even if the PI already has an IRB approval; even for students who work at the state and are authorized to use the data; even if it is data that the student is authorized to use at Intermountain or another corporate situation. Students using animal data must check on the requirements of the Institutional Animal Care and Use Committee (IACUC) http://ehs.utah.edu/research-safety/iacuc. Statisticians must often counsel their clients to make an IRB application, or to ensure that the statistician is authorized by the IRB to analyze the data. Therefore, the ability to articulate the ethics issues, as well as experience with an actual IRB application of one’s own, are important foundations for the MStat graduate’s career. The University of Utah tracks each MStat student project’s IRB determination based on the student’s IRB application (See http://www.research.utah.edu/irb/ for forms and deadlines.)

Related to the IRB application, all MStat students must take the IRB-required CITI course on ethics and human subjects concerns prior to any data analysis on human subjects. (see http://www.research.utah.edu/irb/training/online.html) Each student must keep the certification current while a student here.

All MStat in Biostatistics students must submit copies of the completed CITI course certificate, IRB application and approvals to their advisor and the MSTAT-Biostatistics Track Academic Coordinator.

5) Biostatistics Practicum

**Overview**

The practicum is one of the culminating experiences in the MStat-Biostatistics program. The purpose is to allow students to obtain specialized, hands-on, real-world experience in routine statistical consulting, data management, and data analysis, comparable to that in a master’s level career biostatistics position. It also allows the student, advisor and a practicing data analysis mentor to evaluate whether the student’s statistics and consulting skills are mature enough to go out into the field as a statistics professional.

**Description**

- Students spend a minimum of one half day a week for one semester, or equivalent, in a direct work experience involving data management and statistical analysis, under the supervision of a mentor from the practicum site. This may be paid or unpaid, but it should not ordinarily be work done at a job the student held before beginning the MStat-Biostatistics program.
- A practicum is intended to assess and increase one’s experience in routine data management and statistical data analysis. It is different from an MStat-Biostatistics project in that it involves routine data management and data analysis, whereas the MStat-Biostatistics Project involves learning a new statistical method, using it to think through the analysis of a data set, and writing a report to another statistician which summarizes the statistical and clinical issues, explains one’s statistical logic and summarizes the statistical and clinical results.
- Students will generally participate in a current or ongoing data analysis project of the practicum site, or, if feasible, propose their own projects.
- A prior statement of objectives, a report by the student summarizing experiences and knowledge gained, an evaluation by the student, and an evaluation by the mentor with concurring advisor signature are required, using forms provided by the MStat-Biostatistics Program.
Criteria for Selecting Practicum Sites

- Site business should be closely related to the practice of biostatistics.
- The work experience available at the site must include hands-on experience with the regular biostatistical work of the site, such as direct contact with the patients, clients, or customers.
- The site mentor must be available to supervise and evaluate the student’s experience.
- A practicum is generally distinct from a research opportunity, depending on the student’s career goals.
- Experience at a practicum site might add to the student’s resume.

Report and Evaluation

A student’s practicum is evaluated by the student and the mentor, using forms developed by the MStat-Biostatistics Program, in addition to a 5 (or more)-page report by the student on the experience. The mentor shares their evaluation with the student and the advisor. Based on this information, the advisor assigns a credit (CR) or no credit (NC) for the experience. The quality of the practicum experience is also tracked by selected periodic site visits by the MStat-Biostatistics faculty. The MStat-Biostatistics Program is developing a mechanism with which to track the actual career placement of graduates.

Placement

The student is responsible to set up a practicum, in consultation with the advisor. The advisor will help choose a suitable practicum and find a statistics/statistics-related professional to serve as the mentor. The advisor and mentor will be the student’s main sources of assistance and feedback during this time. Questions may be referred to the MStat in Biostatistics Track Representative as necessary.

Before the practicum begins, the student needs to complete some forms and submit them to the advisor and to the Biostatistics academic coordinator. After the practicum is completed, the student must submit two copies of the required paper by the last day of class in the semester in which he or she wishes to graduate. This must include both completed student and mentor/faculty evaluations.

6) MStat Project

Overview

The MStat project is an example of the statistics that a graduate of this program would be able to perform as a career biostatistician. It should demonstrate one’s ability to think through a new (to the student, but not so hard that the advisor needs to do it for the student) statistical method and data analysis using it. The written report should move through these thought processes: it should *not* look like a medical journal article. The student’s plan should be thoroughly discussed with and approved by the advisor and the members of the supervisory committee. The advisor or others are not forbidden to coach the student on the technique, but this is not usually done and is a sign that the selected statistical method may be too difficult for the purposes of this project. MStat in Biostatistics students are required to submit an IRB application for IRB scrutiny. The advisor and the MSTAT-Biostatistics academic coordinator will need a copy of the project proposal and the IRB’s formal determination.

Purpose of the MStat Project

After completing their course work and practicum, every MStat in Biostatistics student completes one project instead of doing a Master's thesis, and writes a report on it. This project is an example of the kind of analysis that a person with an MStat is qualified to think their way through.
The project should not be simple regressions or t-tests or a technique that the student has learned in a class. If they involve solely routine data analysis, they are not good projects, although they would be excellent for a practicum. MStat in Biostatistics projects need to have some added component which makes them non-routine, and for which the student needs to learn something new, such as mixed models (although most of these have become routine), propensity score models, instrumental variables, methods of missing value imputation, a simulation study of Phase I study designs, a special analysis for a crossover study, etc.

The student is expected to learn the technique well enough to explain it to other statisticians. Some students will read a statistical journal article, program the method and use it on a data set. Uncommonly, a very messy data set with multicollinearity and other issues may be enough of an added feature to make a project worth being a Masters project. The rare student will actually invent a new statistical method or prove a theorem, since this would be PhD-level.

The student's supervisory committee members are there to witness that the student can think their way through a project. The student chooses them to be knowledgeable about the statistics and the projects. Usually two are PhD statisticians, and one member might not be a statistician. The committee can listen and be a sounding board, but if the student's committee members have to provide 'help' very much at all, that would be a warning flag that the project is too hard for the student, and another project should be selected. Thus, it is important to wait until the necessary coursework is successfully completed, to be ready for the work of the project.

The written report is to be written in good scientific English and to show how the student thought their way through the project. It describes the medical or scientific issue, the statistical method, and how the statistics answered the research question. The report needs to justify the student's choices of analyses, checks of assumptions, and other analytic decisions, to another statistician. This is different from the kind of writing that would be done for the MPH program, as it is more statistically sophisticated. It is generally NOT the kind of writing that is suitable for a medical journal. The report also needs to include a section explaining the results and their importance to a non-statistician client.

Some MStat students are able to find funding for their projects, and others do the projects for free. It is acceptable to get paid for doing the projects, and it is acceptable to do the projects for free, if there is a project that interests the student, and for which there is no funding.

**When to Start the MStat Project**

A student should have taken the Math 5010-5080-5090; at least one of the FPMD 6106-6107; and Math 6010 or FPMD 7120 before they start their projects, so that they will have enough theoretical basis to be able to teach themselves a more advanced statistical technique and use it on data. Preferably, they will also have had a regression class, Math 6020 or FPMD 7130, and the Biostatistics seminar, and they will be just starting the Stat 6869 course. However, it depends on the project and the student.

The concept of the MStat project must be approved by the Supervisory Committee before the student can start working on it.

**Project Pre-Oral Defense**

Students will arrange for a pre-oral defense of their project meeting with their Supervisory Committee. Prior to the pre-oral defense, the complete presentation (e.g. powerpoint) and written project report must be given to the supervisory committee by deadlines they identify, in order to give them adequate time to review these documents. Supervisory Committee members will vote on whether or not the student is cleared to proceed with the final defense. All Supervisory Committee members must be in favor for the student to proceed to final defense.
**Project Defense/Oral Examination**

Students should bring two completed copies of Report of the Final Examination for the Masters Degree to the oral examination. It can be found at: [http://www.gradschool.utah.edu/students/forms/masters/final.pdf](http://www.gradschool.utah.edu/students/forms/masters/final.pdf)

The student is required to advertise the oral examination. This is mandated by the Graduate School and the MStat program. It is a part of academic culture. It is also a good learning experience that gives practice in what comes later in one’s career—presenting a project and defending it before the public. The advertisements should be emailed to the MStat Program Administrator and also placed in locations throughout the Division of Public Health for a minimum of 10 working days. It is perfectly reasonable for other students to sit in the audience and watch a defense; in fact, it will be good for them (and will give the student encouragement.)

Reminder: a student MUST be enrolled for at least three credit hours during the semester in which he or she defends the project.

**Final Approval**

After the project defense, the Committee indicates on the Report of the Final Examination for the Masters Degree whether the student passed or failed.

Upon successful defense of the project, students are responsible for making changes, if any, to the final project report within 60 days of the final defense. After final edits on the MStat project report are completed, the student should give copies of the report to: each member of the supervisory committee, the Biostatistics Track Academic Coordinator, and the MStat Program Administrator. The student should also email a copy to their advisor. The student should give a signed copy of the Report of the Final Examination for the Masters Degree to both the Biostatistics Track Academic Coordinator and also to the MStat Administrator for processing. The chair of the supervisory committee will then assign a final letter grade for the FPMD 6970 course. If the student is completing a T grade on FPMD 6970, the advisor will need to send changes of grade for each semester in which there was a T.
Projected Timeline

To assist students to anticipate how to schedule completion of their MStat project, the following timeline is recommended.

<table>
<thead>
<tr>
<th>Task</th>
<th>Notes on Time Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students obtains faculty signatures to serve on supervisory committee</td>
<td>1 week</td>
</tr>
<tr>
<td>Student sends proposal to supervisory committee and receives approval in a committee meeting</td>
<td>2-3 weeks to schedule</td>
</tr>
<tr>
<td>Student obtains IRB review of project</td>
<td>1-2 months</td>
</tr>
<tr>
<td>…student works on project…committee meetings as needed…</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Committee meeting when the student has finished the project</td>
<td></td>
</tr>
<tr>
<td>Student writes draft of final project report and prepares PowerPoint for oral exam</td>
<td>2-4 weeks</td>
</tr>
<tr>
<td>Student sends draft of final report to faculty 2 weeks prior to pre-oral committee meeting</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Student presents project at “pre-oral” committee meeting and receives go-ahead for oral exam</td>
<td></td>
</tr>
<tr>
<td>Student makes changes and distributes new draft 2 weeks before oral exam</td>
<td></td>
</tr>
<tr>
<td>Student works with Track and MStat program staff to advertise oral exam</td>
<td>10 days before oral exam</td>
</tr>
<tr>
<td>Final Oral Exam</td>
<td>Last day of the semester in which the student plans to graduate</td>
</tr>
<tr>
<td>Student makes final changes in written report and receives approval from advisor</td>
<td>2 weeks to make changes, 2 weeks for advisor to review and approve</td>
</tr>
<tr>
<td>Final Report received by supervisory committee and Biostatistics Academic Program Coordinator</td>
<td>No more than 60 days later than oral exam</td>
</tr>
</tbody>
</table>

7) Graduation

During the semester that a student intends to graduate, the student should check with the University of Utah Graduation office (http://www.sa.utah.edu/regist/graduation/graduation.htm) or in the Graduation portion of the Campus Information System (CIS) to ensure that all requirements are recorded as having been met and that the student is approved to graduate. It is advisable for students to keep copies of all signed forms, in case of any discrepancy.

The University of Utah’s commencement is held annually at the close of spring semester. (http://www.sa.utah.edu/commencement/) However, individual colleges often have their own convocations. The MStat in Biostatistics degree is conferred by the University of Utah Department of Family and Preventive Medicine during the School of Medicine’s Commencement. (http://medicine.utah.edu/studentaffairs/student/studentlife/Commencement.htm)
Appendix A: Forms and Worksheets
Please complete this form and submit it to the Public Health Program prior to registering for FP MD 69. The practicum must be approved by the faculty advisor and the mentor. This form must be complete and signed by all parties prior to starting the practicum.

Student Name: ___________________________ Phone #: ___________________________

Student ID #: ___________________________ Semester and Yr: ___________________________

Location of Practicum Site: ___________________________

Name of Mentor: ___________________________ Phone #: ___________________________

Address of Mentor: ___________________________

Brief Description of Practicum Experience: ___________________________

Objectives:


Faculty Advisor Signature: ___________________________________________ Date: ___________________________

Mentor Signature: ___________________________________________ Date: ___________________________

*At the conclusion of the practicum experience, the student should submit a 5 (or more)-page report and student evaluation form reflecting on the practicum experience to the academic advisor. The mentor should evaluate the student’s performance using the mentor evaluation form and discuss it with the student. The student should take the mentor evaluation to the faculty advisor for signature and then should forward the forms, report, and letter grade to the MSTAT in Biostatistics Academic Advisor by the last day of class in the semester during which the student is registered for the practicum. The Academic Advisor will keep a copy for the student’s file and forward a copy to the Faculty Practicum Coordinator. The practicum is a 1 credit hour class.
Student Name:  

Mentor’s Name:  

Evaluation Date:  

Dates of Service:  

to  

Practicum Site:  

How well do you feel the student met his/her objectives?  

Were the student’s objectives suitable for this area of service?  

Did this practicum increase the student’s knowledge or experience?  

How would you rate the student’s overall performance? Is this student ready to go out into biostatistical practice?  

What suggestions would you make to help meet or enhance the opportunity provided to the student?  

To what career opportunities do you feel this practicum exposes the student?  

Mentor Signature:  

Grade:  

For Office Use Only:  

Received by:  

Date Received by:  

Department of Family and Preventive Medicine, 375 Chipeta Way Suite A, SLC, UT 84108; 801-587-3382; 801-587-3353-fax  

Form 6960-ment_eval rev. 12/19/2016  

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Please complete this form after completing the practicum and submit it to the Public Health Program. This form will be placed with your records.

Name: ___________________________ Student ID: ___________________________

Mentor’s Name: __________________ Dates of Service: ________________________

Practicum Site: __________________

Objectives:

How were your objectives met (or not met)?:

What did you feel that you learned best from the training you received?

What did you understand least? What could have been improved?

List three things you would like to see stay the same at this site?

1. __________________________________________
2. __________________________________________
3. __________________________________________

List three things which would have improved your experience at this site:

1. __________________________________________
2. __________________________________________
3. __________________________________________

For Office Use Only: Received by: __________________ Date Received by: __________________

Department of Family and Preventive Medicine, 375 Chipeta Way Suite A, SLC, UT 84108; 801-587-3382; 801-587-3353-fax Form 6960-ment_eval rev. 12/19/2016
How would you describe this site to other students?

What kinds of students might be potentially interested in this site?

Would you recommend this particular environment to others seeking a practicum?

Why or why not?
Coursework (Credit hours must total 38):
Core (must total at least 30 credits; B- or better in each course):

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Prerequisite</th>
<th>Semester Offered</th>
<th>When Taken</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPMD 6107</td>
<td>Survival Analysis</td>
<td>3</td>
<td>MStat/Biostatistics prerequisites; Math 5080, Math 5090 (concurrent enrollment or instructor permission)</td>
<td>Fall ’13 and alternate years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6106</td>
<td>Categorical Data Analysis</td>
<td>3</td>
<td>MStat/Biostatistics prerequisites; Math 5080, Math 5090 (concurrent enrollment or instructor permission)</td>
<td>Fall ’14 and alternate years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6300</td>
<td>Epidemiology</td>
<td>3</td>
<td>None</td>
<td>Spring and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6307</td>
<td>Biostatistics Seminar (must be taken first year)</td>
<td>1</td>
<td>Instructor Permission</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6308</td>
<td>Biostatistics Seminar (must be taken second year)</td>
<td>1</td>
<td>Instructor Permission</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 5010</td>
<td>Introduction to Probability</td>
<td>3</td>
<td>Math 2210 or 1260 (Calculus III)</td>
<td>Spring and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 5080</td>
<td>Statistical Inference I</td>
<td>3</td>
<td>Math 5010</td>
<td>Spring and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 5090</td>
<td>Statistical Inference II</td>
<td>3</td>
<td>Math 5080</td>
<td>Spring and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stat 6869</td>
<td>Advanced Methods in Statistics (capstone)</td>
<td>3</td>
<td>Completion of all other coursework</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stat 6969 or Stat 6003</td>
<td>Special Topics in Statistics</td>
<td>3</td>
<td>Varies</td>
<td>Spring, Summer and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6970</td>
<td>Statistical Investigation and Reporting (project)</td>
<td>3</td>
<td>Instructor Permission, MStat in Biostatistics students only</td>
<td>Spring, Summer and Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPMD 6971</td>
<td>Biostatistics Practicum</td>
<td>1</td>
<td>Instructor Permission, MStat in Biostatistics students only</td>
<td>Spring, Summer and Fall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Core course credit hours 30
Additional Required Courses (must total 6 credits; B- or better in each course):

<table>
<thead>
<tr>
<th>Option 1</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Math 6010</td>
<td>Linear Models</td>
<td>3</td>
</tr>
<tr>
<td>Math 6020</td>
<td>Multivariate Models</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FPMD 7120</td>
<td>Linear and Logistic Regression Models</td>
<td>3</td>
</tr>
<tr>
<td>FPMD 7130</td>
<td>Longitudinal Data Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives (must total at least 2 semester hours; B- or better in each course)

| Technical elective approved by advisor | 2 |

Elective course credit hours

Total credit hours 38

Prerequisites:

<table>
<thead>
<tr>
<th>Course</th>
<th>Course that meets requirement</th>
<th>When Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 semesters Biology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Semesters Calculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evidence of Multivariate Calculus Programming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Statistics courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matrix Algebra</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Requirements (Please refer to the Graduate School webpage for important dates):

During 2nd semester:
Submit original and 1 copy of Request for Supervisory Committee to the Academic Coordinator
Submitted: __________
Approved: __________

Practicum:
1. Prior to starting: Submit form outlining objectives, signed and approved by advisor and mentor
Submitted: __________
2. Obtain IRB approval (if required)
Approved: __________
3. At conclusion: Submit 2 complete sets of completed and signed forms and five page paper
Submitted: __________

Project:
1. Submit one page project proposal to supervisory committee
Submitted: __________
2. Obtain IRB approval (All students must file an application.)
Approved: __________
3. Hold a pre-oral with supervisory committee
Date: __________
4. Hold an oral with supervisory committee
Date: __________
5. Submit the Report of the Final Examination for the Master's Degree (Supervisory Committee must sign form) to the Academic Coordinator
Submitted: __________

During the semester prior to graduation:
Submit original and 4 copies of Application for Admission to Candidacy form and supervisory committee form (Supervisory Committee must sign form)
Submitted: __________
Appendix B: Other Forms

IRB FORMS
All MStat in Biostatistics students must fill out a University of Utah IRB application for their MStat project, including a protocol summary and a web-based IRB application.

Forms and deadlines are at: http://www.research.utah.edu/irb/

GRADUATE SCHOOL FORMS FOR MASTERS DEGREES
Graduate School forms for various steps of the MStat program can be found at: http://www.gradschool.utah.edu/students/masters_forms.php