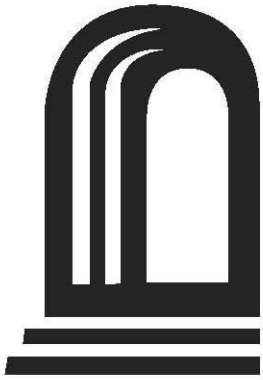

OREGON
MPH
MASTER OF PUBLIC HEALTH

Biostatistics
(BIO)

Oregon State University
MPH - BIO Track
Student Handbook

2012-2013

(Revised 3/14/2013)

OREGON MPH
MASTER OF PUBLIC HEALTH

Oregon State UNIVERSITY | College of Public Health and Human Sciences

Our Vision

To ensure lifelong health and well-being for every person, every family, every community.

Our Mission

Inspired by our mission as a leading land-grant university, we create synergy in teaching, research and outreach to develop the next generation of globally minded public health and human sciences professionals. Through interdisciplinary research and innovative curricula, we advance knowledge, policies and practices that improve population health in communities across Oregon and beyond.

Our Values

We share the values that guide Oregon State University: Accountability, Diversity, Respect, Responsibility and Truth. To these values, we add our dedication to:

- **Health:** We are committed to advancing lifelong health and well-being for all.
- **Care and Compassion:** With compassion and understanding, we commit to caring for ourselves and others.
- **Innovation:** We embrace innovative approaches to addressing challenges and opportunities.
- **Continuous Improvement:** We continually strive toward high standards by optimizing individual and collective strengths.
- **Cooperation and Collaboration:** We promote a collegial learning and work environment that encourages cooperation, collaboration and active participation.

OREGON MPH
MASTER OF PUBLIC HEALTH

2012-2013 OMPH Biostatistics Track

Student Handbook for Oregon State University

Table of Contents

OREGON MPH
MASTER OF PUBLIC HEALTH

2012-2013 OMPH Program Student Handbook
Oregon State University

Biostatistics Track

I. IMPORTANT: In addition to this handbook, OSU MPH BIO track students *must reference* the Master of Public Health Oregon State University Student Handbook for information pertaining to ALL students.

II. OSU Biostatistics Track Specific Requirements

A. BIO Track Competencies

The objective of the Biostatistics Track is to combine comprehensive training in public health with specific instruction in the principles and methods of Biostatistics to prepare theoretically grounded, culturally competent, and technically skilled public health professionals.

Upon satisfactory completion of the OSU MPH Biostatistics Track, students will be able to:

1. Describe the roles biostatistics serves in the discipline of public health.
2. Describe basic concepts of probability, random variation and commonly used statistical probability distributions.
3. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.
4. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.
5. Apply descriptive and graphical techniques commonly used to summarize public health data.
6. Apply common statistical methods for inference.
7. Apply descriptive and basic inferential methodologies according to the type of study design for answering a particular research question.
8. Interpret results of statistical analyses found in public health studies.
9. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

B. BIO Track Degree Requirements

Completing the MPH degree with a concentration in **Biostatistics** at OSU requires:

1. A total of at least 60 approved credits. These credits include:
    i. OMPH Core courses 16
    ii. Required Biostatistics Track courses 25
    iii. Area of Focus 13
    iv. Field Experience 6
2. Students must maintain a minimum 3.0 (B) grade point average in their graduate courses. Additionally, students may not receive lower than a B- in any required courses (core or track required courses). If lower than a B- is received then the student will need to retake the course.
3. Successful completion of Field Experience.

4. Successful completion of final oral exam.

The following courses are required in the Biostatistics Track

Track Competency	Courses	Links to Program Learning Competencies
1. Describe the roles biostatistics serves in the discipline of public health.	H 510, H 512, H 524, H 525, H 526, H 533, H 571, H 580, H 581, H 582, H 584	PLC #1 PLC #2 PLC #3 PLC #4 PLC #5 PLC #7
2. Describe basic concepts of probability, random variation and commonly used statistical probability distributions.	H 524, H 580, H 581, H 582, ST 521, ST 522	PLC #1 PLC #2
3. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.	H 510, H 524, H 526, H 580, H 581, H 582	PLC #1 PLC #2 PLC #5 PLC #7
4. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.	H 510, H 524, H 580, H 581, H 582	PLC #1 PLC #2 PLC #5 PLC #7
5. Apply descriptive and graphical techniques commonly used to summarize public health data.	H 510, H 524, H 580, H 581, H 582	PLC #1 PLC #2 PLC #5 PLC #7
6. Apply common statistical methods for inference.	H 510, H 524, H 525, H 526, H 580, H 581, H 582, H 584	PLC #1 PLC #2 PLC #5 PLC #7
7. Apply descriptive and basic inferential methodologies according to the type of study design for answering a particular research question.	H 510, H 524, H 525, H 526, H 580, H 581, H 582, H 584	PLC #1 PLC #2 PLC #5 PLC #7
8. Interpret results of statistical analyses found in public health studies.	H 510, H 525, H 526, H 580	PLC #1 PLC #7
9. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.	H 510, H 581, H 582	PLC #1 PLC #4 PLC #5 PLC #7

MPH DEGREE REQUIRMENTS Biostatistics Track (60 credits)

OMPH CORE COURSES (16 credits)
H 512 Environmental and Occupational Health (3)
H 524 Introduction to Biostatistics (4)
H 525 Principles and Practices of Epidemiology (4)*
H 533 Health Systems Organization (3)
H 571 Principles of Health Behavior (3)

Required Biostatistics Track Core Courses (25 credits)
H 526 Epidemiological Methods (3)
H 580 Linear Regression and Analysis of Time to Event Data (4)
H 581 Generalized Linear Models and Categorical Data Analysis (4)
H 582 Analysis of Correlated Health Data (3)
H 584 Analysis of Intervention Studies and Clinical Trials (3)
ST 521 Introduction to Mathematical Statistics (4)
ST 522 Introduction to Mathematical Statistics (4)

Recommended Electives (choose a minimum of 13 credits)
H 564 Computing Tools and Health Data Analysis (3)
H 566 Data Mining in Public Health (3)
H 570 Workflow Analysis and Data Management (3)
H 573 Hierarchical/Multilevel Modeling (3)
H 578 Introduction to Molecular Epidemiology I (3)
H 579 Introduction to Molecular Epidemiology II (3)
H 586 Bayesian Biostatistics in Public Health (3)
H 587 Time to Event Analysis of Health Data (3)
H 592 Spatial Biostatistics and Epidemiology (3)
H 599 Advanced Epidemiology Methods (3)
ST 507 Section 1 Consulting Practicum. Students must take Section 1 (1)
ST 515 Design and Analysis of Planned Experiments (3)
ST 531 Sampling Methods (3)
ST 539 Survey Methods (3)

Alternatively, graduate courses may be chosen from one of the MPH tracks or elsewhere with advice of the track coordinator and the student's advisor.

*Please note that the required epidemiology core course for the OMPH program must be a minimum of 3-credits. The course offered at OSU is a 4-credit course. At the other OMPH institutions, the course is a 3-credit course. Students can take the required epidemiology core course at any of the OMPH institutions. Thus, the credits students receive for the Epidemiology course will be dependent upon where they complete the course.

Internship (6 credits)
H 510 Internship (minimum of 6 credits required)
All BIO track students will be required to complete a minimum six credit internship experience at or near the end of their coursework. That experience will provide the student the opportunity to apply what they have learned in the classroom in an organization that is producing statistical analyses. The student will present their final work product to a faculty committee and that presentation will be open to the university community. This product will include a written report showing how each of the track and program learning competencies has been implemented. The report should be made available to the faculty committee at least one week prior to the exam.

Final Exam
A final oral examination is required of all students in the Biostatistics Track. No thesis is required as might be part of an MS or PhD degree in Biostatistics.

C. Biostatistics Track Sample Course Sequence
It is recommended that MPH courses be taken in a particular sequence to maximize the educational experience. Always consult your advisor regarding your program of study to determine the schedule that fits best for you. The following shows a potential sequence of courses.

Recommended course schedule* for the Biostatistics Track. Electives may differ among students.

Year	Fall	Winter	Spring
1	**H 524** Introduction to Biostatistics **H 525** Principles and Practice of Epidemiology **ST 521** Introduction to Mathematical Statistics I **H 533** Health Systems Organization	**H 580** Linear Regression and Analysis of Time to Event Data **H 526** Epidemiologic Methods **ST 522** Introduction to Mathematical Statistics II **H 584** Analysis of Intervention Studies and Clinical Trials (if offered)	**H 581** Generalized Linear Models and Categorical Data Analysis **Elective** **Elective**
2	**H 582** Analysis of Correlated Health Data **H 512** Environmental and Occupational Health **H 571** Principles of Health Behavior **ST 531** Sampling Methods	**H 584** Analysis of Intervention Studies and Clinical Trials (if offered, or take an Elective) **ST 507** Section 1 Consulting Practicum **Elective** **Elective**	**H 510** Internship

** Some of these courses are not offered every year. Check the class schedules on-line and in the College for current course listings.*

This is not an exhaustive list of graduate courses in Public Health. Please check with your advisor about other elective courses in the College and in other departments.

D. Biostatistics Track Field Experience

Field Experience Information and Orientation

The OMPH Program Office has a database that contains data on field experience sites utilized by students. The database contains information about field experience sites including: agency background information, contact information, specialty track(s) served, and the number of students placed each year. Students at all of the collaborative universities can request access to this database from the Program Office by contacting the Program Coordinator, Alison Schneiger at alison@oregonmph.org.

Links to the Field Experience guidelines and orientation presentations for both students and preceptors can be found on the OMPH website at:
http://www.oregonmph.org/register/register.html#Field

Program Minimum Standards for Field Experiences
In addition to meeting track field experience criteria, all OMPH field/organizational experiences must meet the following:

- Preceptor experience: Preceptor may not be program faculty member or advisor. Preceptors must have public health credentials or appropriate health related credentials and experience to provide appropriate mentorship/supervision in your learning experience. All preceptors and sites will be assessed on a case-by-case basis.
- Competency-based, meeting track and student-specified competencies
- Competencies and field experience site/work scope are pre-approved by advisor and MPH Internship Coordinator
- Evaluated by both student and preceptor, demonstrating competency mastery
- Community or population focus (e.g., public health agency, health care delivery, reimbursement, community organizing, health voluntary, population-based research, worksite setting)
- Minimum of 200 practice hours, 6 units.

E. Biostatistics Track Minimum Standards for Field Experience

In addition to meeting the OMPH Program Minimum Standards for field experiences, internships for students in the Biostatistics Track must meet the following requirements:

- Students will have completed all or most of the required courses before beginning an internship or have written consent from their faculty advisor.
- Students must complete an Application and Learning Contract, Advisor Approval Form, Internship Coordinator Signature Form, Preceptor Signature Form, and

Request for To Be Arranged Course Form which must be received by the MPH Internship Coordinator prior to the start of internship.

- As part of their internship application:
  - Students must develop appropriate learning competencies for the internship and document them in the internship application.
  - Students must describe how their area of focus, internship, and career objectives are connected.
  - Students must be able to demonstrate that the placement is competency-based including opportunities to develop Track Competencies #1-9.
- Students may seek placements in public and/or private sector organizations with qualified preceptors in the area of Biostatistics.
- Students must maintain an ongoing internship/organizational experience journal, and submit both bi-weekly progress reports and a final summary of their work in the practice setting. These reports must be submitted to the MPH Internship Coordinator.
  - In their final reports, students must describe and evaluate the degree to which they demonstrated their individual and BIOS Track learning competencies during their practica.
- Preceptors must evaluate the degree to which students accomplished the stated individual and BIOS Track learning competencies, using a Likert-scale instrument provided in the General OMPH Handbook. This evaluation form must be submitted to the student's faculty advisor.

F. Culminating Experience: Final Oral Examination.

A final oral examination is required by all students in the Biostatistics Track. No thesis is required as might be part of a MS or PhD degree in Biostatistics.

Upon completion of all required coursework and the internship experience, all MPH students must schedule a final oral examination. (Note: All required coursework and the internship must be completed before taking the examination.) Students must receive approval to take the examination from their academic advisors. All deviations from policy must be approved by the Biostatistics Track Coordinator.

Purpose
The Graduate School at Oregon State University requires all students in a graduate degree-seeking program to participate in a final oral examination. The purpose of the oral examination is to provide students with an opportunity to integrate their educational experiences and draw from coursework and the internship to respond to substantive, methodological, and theory-based questions. In conjunction with the internship, the

examination is designed to test the Biostatistics track competencies and to provide the student an opportunity to assess his or her mastery of the competencies.

Format
The examination will last approximately 2 hours. Student will give an oral presentation of their internship experience and committee members and guests will be present. At the conclusion of the general presentation all visitors will be asked to leave and the oral examination will continue with only the committee members and the student present. Questions will focus on the program, internship, and track competencies.

Committee
The examination committee will be comprised of three faculty members, including the student's advisor, a second member from the Biostatistics faculty, and a third committee member from Biostatistics or other faculty. Students should discuss the procedure for creating committees with their faculty advisor, graduate coordinator, or the Track Coordinator.

Assigning Grade
Students will be assigned a "pass" or "fail" grade. A grade of "pass" means that the student has responded to the examination questions satisfactorily. If the student receives a grade of "fail" on their examination, faculty must provide specific comments, feedback, and suggestions for improvement. Failure of the examination may result in additional coursework, remedial assignments or readings, prior to retaking the examination. Students will be allowed one retake of the examination, which will include new questions and follow the same procedures as above. The examination may be retaken no sooner than 10 weeks (one full academic term) after the date of the failed examination.

If the student fails the second oral examination, the student will be terminated from the OMPH program.

OREGON MPH
MASTER OF PUBLIC HEALTH

III. Biostatistics Track Student Advising Sheet

OSU Student Advising Sheet
Biostatistics Track

Student_____ **Today's Date**_____

Date Entered School _____ **Expected Graduation**_____

Address_____ **Phone**_____

Email_____ **ID#** _____

Oregon MPH Core Courses (16 credits)
Required Biostatistics Track Core Courses (minimum of 25 credits)
Area of Focus (minimum of 13 credits)
Internship/Field Experience (6 credits)
Total: 60 Credits

MPH Core Requirements (16)	Term	Grade
H512 Environmental and Occupational Health (3) H524 Introduction to Biostatistics (4) H525 Principles and Practices of Epidemiology (4)* H533 Health Systems Organization (3) H571 Principles of Health Behavior (3)		
*Please note that the required epidemiology core course for the OMPH program must be a minimum of 3-credits. The course offered at OSU is a 4-credit course. At the other OMPH institutions, the course is a 3-credit course. Students can take the required epidemiology core course at any of the OMPH institutions. Thus, the credits students receive for the Epidemiology course will be dependent upon where they complete the course. **Total**_____		

Required Biostatistics Track Core Courses (minimum of 25 credits)	Term	Grade
H 526 Epidemiologic Methods (3) H 580 Linear Regression and Analysis of Time to Event Data (4)		
	Term	Grade

H 581 Generalized Linear Models and Categorical Data Analysis (4)
H 582 Analysis of Correlated Health Data (3)
H 584 Analysis of Intervention Studies and Clinical Trials (3)
ST 521 Introduction to Mathematical Statistics (4)
ST 522 Introduction to Mathematical Statistics (4)

Total_____

Recommended Electives/Area of Focus (choose a minimum of 13 credits)

Term Grade

H 564 Computing Tools and Health Data Analysis (3)
H 566 Data Mining in Public Health (3)
H 570 Workflow Analysis and Data Management (3)
H 573 Hierarchical/Multilevel Modeling (3)
H 578 Introduction to Molecular Epidemiology I (3)
H 579 Introduction to Molecular Epidemiology II (3)
H 586 Bayesian Biostatistics in Public Health (3)
H 587 Time to Event Analysis of Health Data (3)
H 592 Spatial Biostatistics and Epidemiology (3)
H 599 Advanced Epidemiology Methods (3)
ST 507 Section 1 Consulting Practicum. Students must take Section 1 (1)
ST 515 Design and Analysis of Planned Experiments (3)
ST 531 Sampling Methods (3)
ST 539 Survey Methods (3)

Alternatively, graduate courses may be chosen from one of the MPH tracks or elsewhere with advice of the track coordinator and the student's advisor.

Total _____

H 510 Internship/Field Experience (6 credits)

Total _____

List Focus Area courses:

_____

_____

_____

Please note any special arrangements where course substitutes have been approved. Provide details:

_____

_____

NOTES