



**Biostatistics  
(BIO)**

**Oregon State University  
MPH - BIO Track  
Student Handbook**

**2011-2012**





**2011-2012 OMPH Biostatistics Track  
Student Handbook for Oregon State University  
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## 2011-2012 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 plays in recognizing and addressing public health problems;
2. understand and appropriately apply different Biostatistical tools and concepts, such as comparison of two groups, linear and advanced regression, and categorical data methods;
3. apply principles of good ethical/legal practice and cultural competency as they relate to study design, data management and data analysis, including considerations of confidentiality, data security, appropriate pre-testing of data collection instruments, among many;
4. apply common Biostatistical methods for inference in data analyses, including examining the precision and accuracy of estimates and evaluating alternative methods for estimates of parameters;
5. apply Biostatistical skills in the formulation or application of public health programs or policies, including understanding possible biases, limits of existing data, limits of various estimators and procedures, and the effects of missing and incomplete data on inferences;
6. develop written and oral presentations based on Biostatistical analyses to assist in communicating findings and developing recommended evidence-based interventions and control measures in public health research and evaluation.

#### 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 credit hours. 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**

<b>Track Competency</b>	<b>Courses</b>	<b>Links to Program Learning Competencies</b>
1. Describe the roles Biostatistics plays in recognizing and addressing public health problems	H 512, H 524, H 525, H 533, H 571, H 584	PLC #1    PLC #2 PLC #3    PLC #4 PLC #5    PLC #7
2. Understand and appropriately apply different Biostatistical tools and concepts, such as comparison of two groups, linear and advanced regression, and categorical data methods.	H 524, H 525, H 526, H 580, H 581, H 582, ST 521, ST 522	PLC #1    PLC #2 PLC #5    PLC #7
3. Apply principles of good ethical/legal practice and cultural competency as they relate to study design, data management and data analysis, including considerations of confidentiality, data security, appropriate pre-testing of data collection instruments, among many.	H 525, H 526, H 571, H 584	PLC #2    PLC#3 PLC #4    PLC #5 PLC #6    PLC #7
4. Apply common Biostatistical methods for inference in data analyses, including examining the precision and accuracy of estimates and evaluating alternative methods for estimates of parameters.	H 524, H 525, H 580, H 581, H 582, H 584, ST 521 ST 522	PLC #1    PLC #2 PLC #4    PLC #7
5. Apply Biostatistical skills in the formulation or application of public health	H 512, H 533, H 525, H 526, H 571, H 584	PLC #1    PLC #2 PLC #5    PLC #7

<p>programs or policies, including understanding possible biases, limits of existing data, limits of various estimators and procedures, and the effects of missing and incomplete data on inferences.</p>		
<p>6. Develop written and oral presentations based on Biostatistical analyses to assist in communicating findings and developing recommended evidence-based interventions and control measures in public health research and evaluation.</p>	<p>H 510 (internship report), H 512, H 571, H 580, H 581, H 582, H 584, H 526</p>	<p>PLC #3    PLC #4 PLC #5    PLC #6 PLC #7</p>

**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 (3)
- H 533 Health Systems Organization (3)
- H 571 Principles of Health Behavior (3)

**Required Biostatistics Track Core Courses (25 credits)**

- H 580 Linear Regression and Analysis of Time to Event Data (4 credits)
- H 581 Generalized Linear Models and Categorical Data Analysis (4 credits)
- H 582 Analysis of Correlated Health Data (3 credits, new course, current H 599)
- H 584 Analysis of Intervention Studies and Clinical Trials (3 credits, current H 599)
- ST 521 Introduction to Mathematical Statistics (4 credits)
- ST 522 Introduction to Mathematical Statistics (4 credits)
- H 526 Epidemiological Methods (3 credits)

**Recommended Electives (choose a minimum of 13 credits)**

- ST 507 Section 1 Consulting Practicum (1 credit) Students must take Section 1.
- ST 515 Design and Analysis of Planned Experiments (3 credits)
- ST 531 Sampling Methods (3 credits)
- ST 539 Survey Methods (3 credits)
- H 552 Advanced Epidemiology Methods
- H 570 Workflow Analysis and Data Management (3 credits)



H 564 Computing Tools and Health Data Analysis (3 credits)  
H 592 Spatial Biostatistics and Epidemiology (3 credits)  
H 586 Bayesian Biostatistics in Public Health (3 credits)  
H 566 Data Mining in Public Health (3 credits)  
H 573 Hierarchical/Multilevel Modeling (3 credits)  
H 578 Introduction to Molecular Epidemiology I (3 credits)  
H 579 Introduction to Molecular Epidemiology II (3 credits)  
H 587 Time to Event Analysis of Health Data (3 credits)

**Recommended Electives (choose a minimum of 13 credits)**

ST 507 Section 1 Consulting Practicum (1). Students must take Section 1.  
ST 515 Design and Analysis of Planned Experiments (3)  
ST 531 Sampling Methods (3)  
ST 539 Survey Methods (3)  
H 570 Workflow Analysis and Data Management (3)  
H 552 Advanced Epidemiologic Methods (3)  
H 564 Computing Tools and Health Data Analysis (3)  
H 592 Spatial Biostatistics and Epidemiology (3)  
H 586 Bayesian Biostatistics in Public Health (3)  
H 566 Data Mining in Public Health (3)  
H 573 Hierarchical/Multilevel Modeling (3)  
H 578 Introduction to Molecular Epidemiology I (3)  
H 579 Introduction to Molecular Epidemiology II (3)  
H 587 Time to Event Analysis of Health Data (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.

**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 by 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	<b>H 524</b> Introduction to Biostatistics <b>H 525</b> Principles and Practice of Epidemiology <b>ST 521</b> Introduction to Mathematical Statistics I <b>H 533</b> Health Systems Organization	<b>H 580</b> Linear Regression and Analysis of Time to Event Data <b>H 526</b> Epidemiologic Methods <b>ST 522</b> Introduction to Mathematical Statistics II <b>H 584</b> Analysis of Intervention Studies and Clinical Trials (if offered)	<b>H 581</b> Generalized Linear Models and Categorical Data Analysis <b>Elective</b> <b>Elective</b>
2	<b>H 582</b> Analysis of Correlated Health Data <b>H 512</b> Environmental and Occupational Health <b>H 571</b> Principles of Health Behavior <b>ST 531</b> Sampling Methods	<b>H 584</b> Analysis of Intervention Studies and Clinical Trials (if offered, or take an Elective) <b>ST 507</b> Section 1 Consulting Practicum <b>Elective</b> <b>Elective</b>	<b>H 510</b> 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 Schmeiger at [alison@oregonmph.org](mailto: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
- 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 must complete all required courses before beginning an internship or have written consent from their faculty advisor.
- Students must complete an internship application, which must be approved by their major professor/advisor prior to the start of placement.
- 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 #1-6.
- Students may seek placements in public and/or private sector organizations with qualified preceptors in the area of Biostatistics.
- Students must submit bi-weekly progress reports and a final summary of their work in the practice setting. These reports must be accepted by students' faculty advisors.

- In the final report, students must describe and evaluate the degree to which they demonstrated their individual and Track learning competencies during their internship.
- Preceptors must evaluate the degree to which students accomplished the stated individual and 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 3 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 Public Health 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.



**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)  
**Total:** 60 Credits

<b>MPH Core Requirements (16)</b>	<b>Term</b>	<b>Grade</b>
H512 Environmental and Occupational Health (3 credits)		
H525 Principles and Practices of Epidemiology (3 credits)		
H524 Introduction to Biostatistics (4 credits)		
H533 Health Systems Organization (3 credits)		
H571 Principles of Health Behavior (3 credits)		
		<b>Total</b> _____

<b>Required Biostatistics Track Core Courses (minimum of 25 credits)</b>	<b>Term</b>	<b>Grade</b>
ST 521 Introduction to Mathematical Statistics (4)		
ST 522 Introduction to Mathematical Statistics (4)		
H 526 Epidemiologic 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)		
		<b>Total</b> _____

<b>Recommended Electives/Area of Focus (choose a minimum of 13 credits)</b>		
	Term	Grade
ST 507 Section 1 Consulting Practicum (1). ST 515 Design and Analysis of Planned Experiments (3) ST 531 Sampling Methods (3) ST 539 Survey Methods (3) H 570 Workflow Analysis and Data Management (3) H 591 Epidemiology III (3) H 564 Computing Tools and Health Data Analysis (3) H 592 Spatial Biostatistics and Epidemiology (3) H 586 Bayesian Biostatistics in Public Health (3) H 566 Data Mining in Public Health (3) H 573 Hierarchical/Multilevel Modeling (3) H 578 Introduction to Molecular Epidemiology I (3) H 579 Introduction to Molecular Epidemiology II (3) H 587 Time to Event Analysis of Health Data (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.		
	<b>Total</b>	_____
<b>H 510 Internship/Field Experience (6 credits)</b>		
<b>Total</b> _____		

**List Focus Area courses**

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

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## NOTES