



**Biostatistics  
(BIO)**

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

**2010-2011**





**2010-2011 OMPH Biostatistics Track  
Student Handbook for Oregon State University  
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## 2010-2011 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 Oregon MPH Biostatistics Track, students should 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 regression, and dichotomous 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 statistical 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. These would include understanding possible biases, limits of existing data, limits of various estimators and procedures, and the effect of missing data on inferences.
6. Develop written and oral presentations based on statistical 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 in **Biostatistics** at OSU requires:

A total of at least 60 approved credit hours. These credits include:

a. OMPH Core courses	16
b. Required Track courses	25
c. Area of Focus	13
d. 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 plays in recognizing and addressing public health problems	H 524, H 525, H 533, H 512, H 571, H 515	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 regression, and dichotomous data methods.	H 524, H 525, H 526, HDFS 531, HDFS 532, H 570, ST 521, ST 522, ST 531, H 599 (Generalized Linear Models)	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 599 (Intervention Studies and Clinical Trials), ST 515, H 599 (Public Health Surveillance), H 570, H 599 (Intervention Studies and Clinical Trials), H 515	PLC #2    PLC#3 PLC #4    PLC #5 PLC #6    PLC #7
4. Apply common statistical methods for inference in data analyses, including examining the precision and accuracy of estimates and evaluating alternative methods for estimates of parameters.	H 525, HDFS 531, HDFS 532, ST 521 ST 522, H 526	PLC #1    PLC #2 PLC #4    PLC #7
5. Apply Biostatistical skills in the formulation or application of public health programs or policies. These	H 533, H 512, H 571, H 525, H 599 (Public Health Surveillance), H 599 (Intervention Studies and	PLC #1    PLC #2 PLC #5    PLC #7

would include understanding possible biases, limits of existing data, limits of various estimators and procedures, and the effect of missing data on inferences.	Clinical Trials)	
6. Develop written and oral presentations based on statistical analyses to assist in communicating findings and developing recommended evidence-based interventions and control measures in public health research and evaluation.	H 510 (internship report), H 533, H 512, H 571, H 515	PLC #3    PLC #4 PLC #5    PLC #6 PLC #7

**DEGREE REQUIREMENTS Biostatistics Track (60 credits)**

**MPH 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 Organization, Financing and Delivery of Health Care (3)
- H 571 Principles of Health Behavior (3)

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

*\*Note: The H 591 courses will be renumbered during the 2010-11 academic year.*

- ST 521 Introduction to Mathematical Statistics I (4)
- ST 522 Introduction to Mathematical Statistics II (4)
- HDFS 531 Research in Human Development and Family Sciences II (4) (Multiple Linear Regression)
- HDFS 532 Research in Human Development and Family Sciences III (4) (ANOVA)
- ST 531 Sampling Methods (3)
- H 526 Epidemiological Methods (3) or Intermediate Epidemiology
- \*H 599 Epidemiology III (3) or Advanced Epidemiology

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

- ST 509 Consulting Practicum (1)
- ST 515 Design and Analysis of Planned Experiments (3)
- ST 539 Survey Methods (3)
- H 515 Research Methods in Health and Safety (3)
- H 570 Workflow of Data Analysis (3)

- \*H 599 Generalized Linear Models and Categorical Data Models (3)
- \*H 599 Chronic Disease Epidemiology (3)
- H 575 Evaluation of Health Promotion and Education Programs (3)
- \*H 599 Public Health Surveillance (3)
- \*H 599 Principles of Intervention Studies and Community Trials (3)

Alternatively, courses may be chosen from one of our tracks 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 3 days prior to the exam.**

**C. Biostatistics Track Sample Course Sequence**

It is recommended that OMPH 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 typical recommended sequence of courses.

**Recommended course schedule\* for required classes taken at OSU in the Biostatistics Track** (Electives may differ among students.)

Year	Fall	Winter	Spring
First	<b>H 524, Introduction to Biostatistics</b> <b>H 525 Introduction to Epidemiology</b> ST 521 Introduction to Mathematical Statistics I <b>H 533 Health Systems Organization</b>	HDFS 531 Research In Human Development and Family Science II H 526 Epidemiologic Methods ST 522 Introduction to Mathematical Statistics II <b>H 571 Principles of Health Behavior</b>	HDFS 532 Research In Human Development and Family Science III ST 531 Sampling Methods H 570 Workflow Analysis and Data Management
Second	<b>H 512 Environmental and Occupational Health</b> H 599 Generalized Linear Models and Categorical Data Models H 515 Research Methods	H 599 Chronic Disease Epidemiology H 599 Fundamentals of Intervention Studies and Clinical Trials ST 515 Design and	H 510 Internship

	in Health and Safety	Analysis of Planned Experiments	
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Note: courses in **bold** are OMPH core courses.

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

This is not an exhaustive list of graduate courses in the Department of Public Health. Please check with your advisor about other elective courses in this department 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](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:

- Precepted 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 site 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.

(Policy approved by OMPH Coordinating Council and Track Coordinators Committee 2-1-05; revision approved 6/11/08)

### **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 applications:
  - 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 their final reports, students must describe and evaluate the degree to which they demonstrated their individual and Track learning competencies during their practica.
- 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 MPH 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 exam.) Students must receive approval to take the exam from their academic advisors. All deviations from policy must be approved by the Track Coordinator (OSU).

### *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 exam 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 2-3 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 exam committee will be comprised of three faculty members, including the student's advisor and two additional members who are faculty of the Department (OSU). 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 exam 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 exam.

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 I (4 credits)		
ST 522 Introduction to Mathematical Statistics II (4 credits)		
HDFS 531 Research in Human Development and Family Sciences II (4 credits) (Multiple Linear Regression)		
HDFS 532 Research in Human Development and Family Sciences III (4 credits) (ANOVA)		
ST 531 Sampling Methods (3 credits)		
H 526 Epidemiological Methods (3 credits) or Intermediate Epidemiology		
*H 599 Epidemiology III (3 credits) or Advanced Epidemiology		
	<b>Total</b>	_____

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

- ST 509 Consulting Practicum (1 credit)
- ST 515 Design and Analysis of Planned Experiments (3 credits)
- ST 539 Survey Methods (3 credits)
- H 515 Research Methods in Health and Safety (3 credits)
- H 570 Workflow Analysis and Data Management (3 credits)
- \*H 599 Generalized Linear Models and Categorical Data Models (3 credits)
- \*H 599 Chronic Disease Epidemiology (3 credits)
- H 575 Evaluation of Health Promotion and Education Programs (3 credits)
- \*H 599 Public Health Surveillance (3 credits)
- \*H 599 Principles of Intervention Studies and Community Trials (3 credits)

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

**Total** \_\_\_\_\_

**H 510 Internship/Field Experience (6 credits)**

**Total** \_\_\_\_\_

**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