

## **Biochemistry and Molecular Biology (PhD) and Public Health (MPH)**

Most PhD programs in the biological sciences have traditionally been designed to prepare graduates for careers in academia. However, a number of graduates are turning increasingly to careers outside of the traditional pathway and this trend toward *alternative career* choices also reflects societal needs for well educated individuals who are prepared to function in settings that require expert research skills as well as public health knowledge and skills. There is an increasing demand for highly skilled professionals who can take advantage of combined educational programs in [Public Health](#) and [Biochemistry/ Molecular Biology](#). This dual degree program is a challenging education for exceptional students, requiring extra motivation and commitment, but rewards include a competitive advantage in the job market. The PhD in Biochemistry and Molecular Biology focuses on the molecular dynamics of life, seeking to understand and describe all aspects of nature at the molecular and cellular level, including the molecular basis of human diseases.

The Master of Public Health prepares students for a professional career in a variety of public health fields and the four concentration areas that are most appropriate for this dual degree program. The following titles are linked to the MPH description for each concentration, as a matter of information.

1. [Toxicology and Risk Assessment](#) (Department of Environmental and Occupational Health): This program builds on a broad foundation in the biomedical sciences with specific attention to toxicology and risk assessment. The program is designed for advanced instruction related to decision-making and approaches to evaluation of responses of organisms (human and animal) to chemical insult and hazards
2. [Environmental Health](#) (Department of Environmental and Occupational Health): This concentration focuses its training in the public health aspects of environmental hazards on health confronting communities today including assessment of social and economic impact, regulations and policy issues.
3. [Global Health/Communicable Disease](#) (Department of Global Health): This program provides an opportunity for biological science oriented students to develop laboratory and public health based communicable disease control skills. Students may also specialize in infection control practices.
4. [Epidemiology](#) (Department of Epidemiology and Biostatistics): As a fundamental science of public health and preventive medicine, epidemiology students are prepared with quantitative and methodological skills to analyze factors affecting health, disease rates and the distribution of disease and disabilities from a population based perspective.

Each college reviews applicants independently and maintains their existing admission criteria and standards (see individual concentration links above). A single graduate school application form is completed, listing both Biochemistry and Public Health as major areas of study. The review process may begin in either college. Students applying to the College of Public Health for Fall 2007 or later need to apply through SOPHAS (see the college of Public Health Admissions page at <http://health.usf.edu/publichealth/degreereqs.html>). The timing of application should take into consideration that the COPH admits students three times per year (Fall, Spring and Summer) and the Department of Biochemistry and Molecular Biology admits students annually in the Fall. Once the applicant has been accepted into one program, the application folder is forwarded to the other program for review. After admission to both programs, the Graduate Admissions office instructs the Registrar's Office to classify the student as dually enrolled in Biochemistry/Molecular Biology and Public Health. In choosing which program to apply to first, students should take into consideration the following: requirements in Biochemistry/Molecular Biology for admission are different than in Public Health, admission to one program doesn't guarantee admission to the other; of course, the student's interests

and career plans. The dual degree student is assigned an advisor for each respective program. Upon completion of all requirements for the dual degree program, the student submits separate applications for graduation to Biochemistry/Molecular Biology and Public Health, and is certified for graduation by both programs. Sample Plans of Study for each concentration area are attached as follows.

**Additional Links**

- [College Master in Public Health degree requirements](#)
- For department specific guidelines for see the department home page. Links to the department home pages may be found on the College's home page (<http://health.usf.edu/publichealth/homepage.html>).
- [Programs Offered Page](#): For information on MPH programs offered by the College of Public Health.
- [Academic and Student Affairs](#): Registration, Academic Procedures, etc.
- [Tuition and Financial Aid](#)
- [College of Public Health Admission Requirements](#)
- [College of Public Health Course Descriptions](#)

College of Public Health - Program Curriculum Check Sheet				
<b>Name:</b>		<b>Dept:</b>		
<b>Advisor:</b>		<b>Degree:</b> MPH*		
<b>Semester/Year Accepted:</b>		<b>Concentration:</b> MPH / Biochem/molecular biology PHD Dual Degree		
Any grade below a C (C- to F) is required to be retaken. The grade will be included in the student's GPA.				
Course		Credits	Grade	Semester
<b>College Core Courses</b>		<b>Total Needed</b>	<b>15</b>	
PHC 6000	Epidemiology	3		
PHC 6050	Biostatistics I	3		
PCH 6102	Principles of Health Policy and Management	3		
PHC 6357	Environmental and Occupational Health	3		
PHC 6410	Social and Behavioral Sciences Applied to Health	3		
<b>Required Concentration Courses**</b>		<b>Total Needed</b>	<b>15-16</b>	
<b>Elective Courses</b>		<b>Minimum Needed *</b>	<b>3</b>	
<i>Required electives for MPH are met by Biochemistry / Molecular Biology course work.</i>				
<b>Culminating Experiences</b>		<b>Minimum Needed</b>	<b>9</b>	
PHC 6945	Field Experience (3-12 credit hours)			
PHC 6977	Special Project (met by PhD Dissertation)	3		
PHC 6936	Public Health Capstone	3		
<b>Minimum 42 credit hours required*</b>		<b>Total GPA Hours</b>		<b>GPA</b>
		<b>Total Hours Attempted</b>		
Rev Fall2010	The College Reserves All Rights to Repeal And/or Modify			

\* This check sheet is for the MPH portion of the dual MPH/Biochemistry and Molecular Biology PHD. The full list of course and credit requirements depends on the public health concentration program selected.

\*\* See next page for required concentration courses.

**Required Concentration Courses by Concentration****Concentration in Environmental Health**Contact Person: Nolan Kimball [nkimball@health.usf.edu](mailto:nkimball@health.usf.edu)

PHC 6301	Analysis of Water and Wastewater	3
PHC 6310	Environmental Occupational Toxicology	3
PHC 6512	Vectors of Human Disease	3
PHC 6356	Industrial Hygiene	2
PHC 6930	Public Health Seminar	1
PHC 6303	Community Air Pollution	3

**Concentration in Global Health Practice / Communicable Disease**Contact Person: Dr. Boo Kwa [bkwa@health.usf.edu](mailto:bkwa@health.usf.edu)

PHC 6251	Disease Surveillance and Monitoring	3
PHC 6511	Public Health Immunology	3
PHC 6510	Emerging and Infectious Diseases	3
PHC 6513	Public Health Parasitology	3
PHC 6512	Vectors of Human Disease	3
PHC 6930	Public Health Seminar	1

**Concentration in Toxicology / Risk Assessment**Contact Person: Dr. Ira Richards [irichard@health.usf.edu](mailto:irichard@health.usf.edu)

PHC 6310	Environmental Occupational Toxicology	3
PHC 6511	Public Health Immunology	3
PHC 6359	Xenobiotic Metabolism in Environmental and Occupational Health	3
HSC 6556	Pathobiology of Human Disease I	3
PHC 6934	Selected Topics in Public Health	3
PHC 6930	Public Health Seminar	1

**Concentration in Epidemiology**Contact Person: Dr. Heather Stockwell [stockwel@health.usf.edu](mailto:stockwel@health.usf.edu)

PHC 6051	Biostatistics II	3
PHC 6053	Categorical Data Analysis	3
PHC 6010	Epidemiology Methods I	3
PHC 6011	Epidemiology Methods II	3
PHC 6701	Computer Application for PH Researchers	3
PHC 6192	Public Health Database Management	1

Contact for Biochemistry / Molecular Biology Department: Inge Wefes, PhD at [iwefes@health.usf.edu](mailto:iwefes@health.usf.edu)

**PhD in Biochemistry / Molecular Biology**

Required Courses		Credits
GMS 6200	Core Course in Medical Biochemistry	5
BCH 5105	Biochemistry Laboratory Rotations	1-3
Approved Electives Biochemistry / Molecular Biology		
BCH 6411	Molecular Biology	4
BCH 6746	Physical Biochemistry	3
GMS 7910	Directed Research	1-19
BCH 6135	Methods in Molecular Biology	4
BCH 6876	Current Topics in Biochemistry / Journal Club	1
BCH 6876	Current Topics in Biochemistry / Journal Club	1
BCH 6876	Current Topics in Biochemistry	1
GMS 7939	Graduate Seminar	1
BCH 6876	Current Topics in Biochemistry	1
GMS 7980	Dissertation Research	2-19
Options for Electives from College of Public Health		
PHC 6050	Biostatistics I	3
PHC 6512	Vectors of Human Disease	3
PHC 6310	Environmental Occupational Toxicology	3
HSC 6557	Pathobiology of Human Disease II	3
PHC 6359	Xenobiotic Metabolism in Environmental and Occupational Health	3
PHC 6701	Computer Applications for Public Health Researchers	3
PHC 6051	Biostatistics II	3
Options for Electives from Biochemistry and Molecular Biology		
PCH 6888	Bioinformatics	2
GMS 7930	Scientific Writing and Research Ethics Selected Topics 1-3	2
BCH 6506	Advances in Enzymology	3
BCH 6876	Special Topics in Protein	2
GMS 6020	Neuroscience	5-6
PCB 6107	Advanced Cell Biology	4
GMS 6501	Cellular and Molecular Pharmacology	4
BCH 6876	Special Topics in Molecular Modeling and Drug Design	2
BCH 6876	Special Topics in Cell Signaling Pathways	2
BCH 6806	Biochemical Endocrinology	2
GMS 6876	Mouse Models of Gene Regulation & Disease	3

**Typical Year by Year Courses of Study****PhD / MPH in Environmental Health**

Year 1	Fall	GMS 6200	Core Biochemistry	5	
		BCH 5105	Biochemistry Laboratory Rotations	1-3	
			Elective	2-3	
			Core Course Public Health	3	
	Spring	BCH 6411	Molecular Biology	4	
		BCH 6746	Physical Biochemistry	3	
		GMS 7418	Directed Research	Var	
			Core Course Public Health	3	
	Summer	BCH 6135	Methods in Molecular Biology	4	
		GMS 7980	Dissertation Research	Var	
			Elective	2-3	
			Core Course Public Health	3	
	Year 2	Fall	GMS 7980	Dissertation Research	Var
BCH 6876			Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Elective	2-3	
			Core Course Public Health	3	
Spring		GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Core Course Public Health	3	
Summer		GMS 7980	Dissertation Research	Var	
			Elective	2-3	
		PHC 6512	Vectors of Human Disease	3	
Years 3 & 4		Fall	GMS 7980	Dissertation Research	Var
			BCH 6876	Current Topics in Biochemistry	1
			GMS 7939	Graduate Seminar	1
	PHC 6301		Analysis of Water and Wastewater	3	
	PHC 6356		Industrial Hygiene of Approved Course	2	
	Spring	GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry	1	
		PHC 6310	Environmental/Occupational Toxicology	3	
		PHC 6930	Public Health Seminar	1-3	
	Summer	GMS 7980	Dissertation Research	Var	
		PHC 6303	Community Air Pollution	3	
		PHC 6945	Supervised Field Experience	3 min	

**PhD / MPH in Global Communicable Disease**

Year 1	Fall	GMS 6200	Core Course in Medical Biochemistry	5	
		BCH 5105	Biochemistry Laboratory Rotations	1-3	
			Elective	2-3	
			Core Course Public Health	3	
	Spring	BCH 6411	Molecular Biology	4	
		BCH 6746	Physical Biochemistry	3	
		GMS 7418	Directed Research	Var	
			Core Course Public Health	3	
	Summer	BCH 6135	Methods in Molecular Biology	4	
		GMS 7980	Dissertation Research	Var	
			Elective	2-3	
			Core Course Public Health	3	
Year 2	Fall	GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Elective	2-3	
			Core Course Public Health	3	
	Spring	GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Core Course Public Health	3	
	Summer	GMS 7980	Dissertation Research	Var	
			Elective	2-3	
		PHC 6512	Vectors of Human Disease	3	
	Years 3 & 4	Fall	GMS 7980	Dissertation Research	Var
			BCH 6876	Current Topics in Biochemistry	1
			GMS 7939	Graduate Seminar	1
			PHC 6510	Emerging Infectious Diseases	3
Spring		GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry	1	
		PHC 6513	Public Health Parasitology	3	
		PHC 6511	Public Health Immunology	3	
Summer		GMS 7980	Dissertation Research	Var	
		PHC 6251	Disease Surveillance and Monitoring	3	
		PHC 6945	Field Experience	3 min	
		PHC 6930	Public Health Seminar	1-3	

**PhD / MPH in Toxicology**

Year 1	Fall	GMS 6200	Core Course in Medical Biochemistry	5	
		BCH 5105	Biochemistry Laboratory Rotations	1-3	
			Elective	2-3	
			Core Course Public Health	3	
	Spring	BCH 6411	Molecular Biology	4	
		BCH 6746	Physical Biochemistry	3	
		GMS 7418	Directed Research	Var	
			Core Course Public Health	3	
	Summer	BCH 6135	Methods in Molecular Biology	4	
		GMS 7980	Dissertation Research	Var	
			Elective	2-3	
			Core Course Public Health	3	
Year 2	Fall	GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Elective	2-3	
			Core Course Public Health	3	
	Spring	GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1	
			Elective	2-3	
			Core Course in Public Health	3	
	Summer	GMS 7980	Dissertation Research	Var	
			Elective	2-3	
		HSC 6557	Pathobiology of Human Disease II	3	
	Years 3 & 4	Fall	GMS 7980	Dissertation Research	Var
			BCH 6876	Current Topics in Biochemistry	1
			GMS 7939	Graduate Seminar	1
PHC 6359			Xenobiotic Metabolism or other approved course	3	
Spring		GMS 7980	Dissertation Research	Var	
		BCH 6876	Current Topics in Biochemistry	1	
		PHC 6310	Environmental/Occupational Toxicology	3	
		PHC 6511	Public Health Immunology	3	
		PHC 7931	Advanced Interdisciplinary Seminar in Mechanisms of Toxicity	1	
Summer		GMS 7980	Dissertation Research	Var	
		PHC ----	Toxicology Elective	3	
		PHC 6945	Supervised Field Experience	3 min	

**PhD / MPH in Epidemiology**

Year 1	Fall	GMS 6200	Core Course in Medical Biochemistry	5
		BCH 5105	Biochemistry Laboratory Rotations	3-Jan
			Elective	3-Feb
			Core Course Public Health	3
	Spring	BCH 6411	Molecular Biology	4
		BCH 6746	Physical Biochemistry	3
		GMS 7418	Directed Research	Var
			Core Course Public Health	3
	Summer	BCH 6135	Methods in Molecular Biology	4
		GMS 7980	Dissertation Research	Var
			Elective	3-Feb
			Core Course Public Health	3
Year 2	Fall	GMS 7980	Dissertation Research	Var
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1
			Elective	3-Feb
			Elective	3-Feb
			Core Course Public Health	3
	Spring	GMS 7980	Dissertation Research	Var
		BCH 6876	Current Topics in Biochemistry/(Journal Club)	1
			Elective	3-Feb
			Core Course Public Health	3
	Summer	GMS 7980	Dissertation Research	Var
			Elective	3-Feb
	Years 3 & 4	Fall	GMS 7980	Dissertation Research
BCH 6876			Current Topics in Biochemistry	1
GMS 7939			Graduate Seminar	1
PHC 6701			Computer Applications for Public Health Researchers	3
PHC 6700			Research Methods in Epidemiology	3
Spring		GMS 7980	Dissertation Research	Var
		BCH 6876	Current Topics in Biochemistry	1
		PHC 6053	Categorical Data Analysis	3
		PHC 6051	Biostatistics II	3
Summer		GMS 7980	Dissertation Research	Var
		PHC 6020	Design and Conduct of Clinical Trials	3
		PHC 6945	Supervised Field Experience	3 min