PhD – Biostatistics Concentration (BIOS)
Competencies and Learning Outcomes

COMPETENCY/LEARNING OUTCOME KEY
Introductory (I) - Competency is introduced through basic public health knowledge and principles
Reinforcing (R) - Competency is reinforced through the integrated formulation and synthesis of public health concepts and principles to address complex problems
X: Learning Outcome (LO) is covered and primarily assessed in the course.
[1]PhD Culminating Experience. Students have the opportunity to expand on various core and concentration competencies.

PHD-BIOS C1 Perform independent research where original/new biostatistical foundations, methodologies or applications are developed.	BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive Examination	BIOS 6395 Doctoral Dissertation
												Culminating Experience[1]	
	I		I	I		R	R	R				R	*R*
LO 1.1 Demonstrate understanding of statistical theory.	X		X	X		X	X	X				X	X
LO 1.2 Construct deductive mathematical arguments.	X		X	X		X	X	X				X	X

Assessment Methods Used: participation, self-assessments, faculty-assessments, projects, community leadership, workshops, reflections, journal club, manuscripts, papers, statistical applications, proposals, teaching, written/oral critiques, NIH Mock Study, comprehensive examination, dissertation, PAD

PHD-BIOS C2 Review and synthesize literature and proposals critically from a biostatistical point of view in preparation for future peer-reviewed publications and grant proposals.	BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive examination	BIOS 6395 Doctoral Dissertation
												Culminating Experience	
	R					I	I	R	R			R	*R*
LO 2.1 Critically evaluate statistical papers.						X	X					X	X
LO 2.2 Critique papers in the health sciences for appropriateness of statistical methods.		X						X	X			X	X

Assessment Methods Used: participation, self-assessments, faculty-assessments, projects, community leadership, workshops, reflections, journal club, manuscripts, papers, statistical applications, proposals, teaching, written/oral critiques, NIH Mock Study, comprehensive examination, dissertation, PAD

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PHD-BIOS C3 **Adapt and apply existing statistical methods as dictated by the needs of a particular study or project as it relates to, but not limited to, study design and analysis.**		BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive examination	BIOS 6395 Doctoral Dissertation
													Culminating Experience	
		I	R	I	I	I			R	R		I	R	*R*
LO 3.1	Apply appropriate statistical methods.	X	X	X	X	X				X		X	X	X
LO 3.2	Compute power and sample size.		X	X					X	X			X	X

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PHD-BIOS C4 **Effectively translate biostatistical ideas, methods, and results to collaborating colleagues.**		BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive examination	BIOS 6395 Doctoral Dissertation
													Culminating Exp.	
		I	R	I	I	I				R	I	I	R	*R*
LO 4.1	Interpret statistical findings and infer its implications.	X	X	X	X					X		X	X	X
LO 4.2	Present statistical findings in a meaningful way.	X	X	X	X	X				X	X	X	X	X

Assessment Methods Used: participation, self-assessments, faculty-assessments, projects, community leadership, workshops, reflections, journal club, manuscripts, papers, statistical applications, proposals, teaching, written/oral critiques, NIH Mock Study, comprehensive examination, dissertation, PAD

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PHD-BIOS C5 **Identify biostatistical concepts and methods needed by a specified group of people.**		BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive examination *Culminating Experience*	BIOS 6395 Doctoral Dissertation
			R						R	R	I	I	R	*R*
LO 5.1	Demonstrate an understanding of how statistics is used in various fields and disciplines.		X						X	X	X	X	X	X

Assessment Methods Used: participation, self-assessments, faculty-assessments, projects, community leadership, workshops, reflections, journal club, manuscripts, papers, statistical applications, proposals, teaching, written/oral critiques, NIH Mock Study, comprehensive examination, dissertation, PAD

PHD-BIOS C5 **Disseminate biostatistical concepts and methods effectively through lectures and written materials.**		BIOS 6314 Categorical Data Analysis	BIOS 6320 Biostatistical Research and Consulting	BIOS 6322 Longitudinal Data Analysis	BIOS 6324 Survival Analysis	EPID 5313 Database Mgmt. & SAS	BIOS 6310 Probability and Statistical Inference	BIOS 6311 Linear Models	BIOS 6312 Methods of Survey Sampling	BIOS 6326 Methods of Clinical Trials	EPID 5310 Intermediate Epidemiology	EPID 5312 Survey Research & Questionnaire Design	BIOS 6000 PhD Comprehensive examination *Culminating Exp.*	BIOS 6395 Doctoral Dissertation
		I	R	I	I	I				R		I	R	*R*
LO 6.1	Communicate statistical ideas to educated lay audiences.	X	X	X	X	X				X		X	X	X

Assessment Methods Used: participation, self-assessments, faculty-assessments, projects, community leadership, workshops, reflections, journal club, manuscripts, papers, statistical applications, proposals, teaching, written/oral critiques, NIH Mock Study, comprehensive examination, dissertation, PAD

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