University of Mississippi 5/2012																																									
Department	Biology																																									
Course #	Bisc 102	Bisc 104	Bisc 160	Bisc 161	Bisc 162	Bisc 163	Bisc 210	Bisc 300	Bisc 301	Bisc 318	Bisc 320	Bisc 322	Bisc 327	Bisc 330	Bisc 331	Bisc 333	Bisc 334	Bisc 336	Bisc 338	Bisc 350	Bisc 415	Bisc 440	Bisc 441	Bisc 445	Bisc 491	Bisc 492	Bisc 502	Bisc 504	Bisc 512	Bisc 518	Bisc 522	Bisc 524	Bisc 528	Bisc 529	Bisc 533	Bisc 541	Bisc 543					
Course Name	Inquiry Into Life - Human Biology	Inquiry into Life - The Environment	Biological Sciences I	Biological Sciences I Lab	Biological Sciences II	Biological Sciences II Lab	Principles of Micro-biology	Research Methods in Biology	Evolution	Botany	Intro Marine Biology	General Ecology	Intro Neuroscience	Intro Physiology	Comparitive Anatomy of the Vertebrates	General Micro-biology	Ornithology	Genetics	Invertebrate Zoology	Mammalogy	Vertebrate Histology	Cell & Molecular Biology	Tropical Botany	Intro to Coral Reef Ecology	Directed Study I	Directed Study II	Mycology	Biometry	Animal Behavior	Micro-techniques	Microbial Ecology	Aquatic Botany	Principles Developmental Biology	Endocrinology	Advanced Neuroscience	Cell Biol Neurodegeneration	Functional Neuro-anatomy					
Pre-requisite(s), if any	none	none	ACT Math 23; A/B Math 123, 125 or Chem 101	Bisc 160, ACT Math 23, A/B Math 123, 125 or Chem 101	Bisc 160 & 161	Bisc 160 & 161	none	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163; Chem 105, 106	Bisc 160/161, 162/163	Bisc 160, 162; Chem 105, 106		Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163, 330	Bisc 330 or Pharm 344, Bisc 336	Bisc 160/161, 162/163	Bisc 160/161, 162/163	Bisc 160/161, 162/163, Instructor Approval	Bisc 160/161, 162/163, Instructor Approval			Bisc 322		Bisc 160/161, 162/163, 333	Bisc 160/161, 162/163	Bisc 440	Bisc 330, Chem 221, 222	Bisc 160/161, 162/163	Bisc 327 or 330	Bisc 330 or 331; or A/B in Psy 319					
Required for Major?	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	No	No	Yes/No	No	No	No	Yes for BS	No	No	No	No	No	No	No	No	No	No	No	No	No	No					
Offerred to Non-major?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes/No		Yes	Yes	Yes	Yes		Yes	Yes	No	Yes		Yes				Yes	Yes	Yes	Yes		Yes	No	Yes					
	E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world											x		E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world														X													
								x		x		x		xx				x		x	x		x		x	x		x	x	x	x	x			x	x						
			x	x		x		x		x		x		xx				x		x	x	x	x		x	x		x	x	x	x	x		x	x	x					
								x				x		x				xx							x	x		x	x	x	x										
										x		x						x					x		x	x		x				x			x							
					x			x				x		x						x	x				x	x	x	x	x													
												x		xx			x					x																				
			x	x						x				x		E2- Demonstrate understanding of the process of scientific inquiry, and explain how scientific kno							x			x	x				x	x										
			x	x		x	x			x		x	x	xx		x	x	x		x	x	x	x		x	x	x	x					x								
			x	x			x			x				x			x	x		x	x	x	x		x	x		x	x												
			x	x			x			x				xx		x		xx		x	x	x	x		x	x	x		x	x											
	x		x	x			x	x		x		x		x				xx		x			x		x	x	x	x	x	x		x	x	x	x	x					
			x	x		x		x		x		x		x							x		x		x	x	x	x	x	x		x	x	x	x	x					
	E3- Demonstrate knowledge of basic physical principles and their applications to the understanding of living systems.																																								
														x							x					x				x	x					x	x						
													x	x												x				x	x				x	x	x						
			x	x						x				x						x	x		x						x													
	x		x	x	x					x		x		x						x	x	x	x			x			x	x		x	x	x	x	x					
	E4- Demonstrate knowledge of basic principles of chemistry and some of their applications to the understanding of living systems.																																								
			x	x			x			x													x				x				x	x									
	x		x	x			x			x	x			x					x		x	x	x	x							x	x									
			x	x			x			x	x			x		x					x	x	x	x																	
			x	x			x			x		x		x									x								x	x									
			x	x										x										x																	
	x		x	x						x	x			x		x					x	x	x	x																	
			x	x						x												x																			
	E5- Demonstrate knowledge of how biomolecules contribute to the structure and function of cells.									x												x																			
	x		x	x			x			x	x		x	x		x					x	x	x	x																	
			x	x	x					x			x	x		x																									
			x	x	x		x			x				x		x		x																							
			x	x	x		x		x	x	x	x								x		x																			
	E6- Apply understanding of principles of how				x					x				x							x		x			x		E6- Apply understanding of principles of how molecular and cell assemblies, organs, and organisms develop structure and c																	
			x	x	x					x	x			x		x		x	x		x	x	x	x							x	x									
	x				x								x	x							x		x						x												
	x		x	x	x					x				x				x	x	x	x		x						x			x	x								
					x					x				x	x				x	x	x					x															
	E7- Explain how organisms sense and control				x				x	x		x		x						x			x			x						x									
			x	x	x				x	x	x	x		x						x			x			x						x								x	
			x	x	x				x	x		x	x	x		x		x		x	x	x	x			x						x								
					x		x			x		x	x	x		x		x					x										x								x
	E8- Demonstrate an u		x	x	x		x			x	x		x				x	x	x		x			x		x	x													
			x	x	x		x			x	x		x				x	x	x		x		x			x	x													
			x	x	x		x			x	x		x	x		x		x					x			x						x								

		Chemistry and Biochemistry																																Economics	
Bisc 611	Bisc 619	Chem 105	Chem 106	Chem 115	Chem 116	Chem 221	Chem 222	Chem 225	Chem 226	Chem 314	Chem 331	Chem 332	Chem 334	Chem 337	Chem 351	Chem 401	Chem 402	Chem 423	CHEM 463	Chem 469	Chem 471	Chem 472	Chem 473	Chem 512	Chem 514	Chem 527	Chem 528	Chem 531	Chem 532	Chem 534	Chem 536	Chem 544	Chem 580	Chem 581	Econ 230	Math 115
Wetland Ecology	Ecosystems Ecology	General Chemistry I	General Chemistry II	General Chemistry Lab I	General Chemistry Lab II	Organic I	Organic II	Organic Lab I	Organic Lab II	Quantitative Analysis	Physical Chem I	Physical Chem II	Biophysical Chemistry	Physical Chemistry Lab		Advanced Inorganic Chemistry	Advanced Inorganic Chemistry Lab	Organic Anal	Senior Research	Instrumental Anal	Biochem I	Biochem Lab	Biochem II	Adv. Instrumental Anal.	Fundamentals of Electrochemistry	Adv. Organic Chemistry Str. Mech.	Adv. Organic Chemistry Str. Syn.	Adv. Phys. Chem. Quantum	Adv. Phys. Chem. Thermodynamics	Physical Biochemistry	Adv. Phys. Chem. Rxn Dynamics	Chem. Applications of Group Theory	Molecular Biochemistry I	Molecular Biochemistry II	Statistics I	Elementary Statistics
Bisc 160/161, 162/163		23 Math ACT (590 SAT) or Chem 101 ≥B, or Math 125 ≥B	CHEM 105 ≥C	co Chem 105	co Chem 106	Chem 106 with ≥C	CHEM 221 ≥C	Chem 116	Chem 225	Chem 222, 226	Chem 222	Chem 331	Chem 222	co Chem 332		Chem 332	Chem 332	Chem 222, 226	Chem 226	Chem 314, 331	Chem 222	Chem 471	Chem 222	Chem 469	Chem 469	Chem 331	Chem 331	Che 332	Chem 332	Chem 331 or 334	Chem 332	Chem 401	Chem 222, 226	Chem 222, 226	Math 267	
No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	For BS	For BS	Yes	For BS		For BS	For BS	For BS	For BS	For BS	For BA Biochem, BS	For BA Biochem	For BA Biochem, BS	No	No	No	No	No	No	No	No	No	For BA Biochem	No	Y	No
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y	Yes
E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world													E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world																						
x	x	x	x	x	x					x	x	x	x	x		x	x		x	x				x	x	x		x	x	x	x	x			x	x
x	x	x	x	x	x					x	x	x	x	x		x	x		x	x				x	x			x	x	x	x	x			x	x
	x	x	x	x	x						x	x	x	x					x	x		x		x	x	x		x	x	x	x				x	x
x											x	x	x								x		x		x			x	x	x	x	x	x	x		
x	x										x	x	x													x									x	
	x																														x					
x		E2- Demonstrate understanding of the process of scientific inquiry, and explain how scientific knowledge is discovered and validated.																																		
x				x	x			x	x					x				x		x		x														
x				x	x			x	x					x				x		x		x														
x				x	x			x	x	x				x		x	x	x		x		x														
x																		x				x												x	x	
x	x																	x	x			x			x	x	x	x	x	x	x	x	x	x	x	
		E3- Demonstrate knowledge of basic physical principles and their applications to the understanding of living systems.																																		
																					x		x													
x		x	x								x	x	x																x	x						
		x	x								x	x	x															x		x						
x																					x		x													
		x	x	E4- Demonstrate knowledge of basic principles of chemistry and some of their applications to the understanding of living systems.																																	
x	x	x	x																																	
x		x	x																																	
x		x	x																																	
x	x	x	x																																	
		x	x																																	
x		x	x			x	x														x		x													
x		E5- Demonstrate knowledge of how biomolecules contribute to the structure and function of cells.																																		
x																					x		x													
x	x																				x		x													
x																					x		x											x	x	
x																					x		x											x	x	
rry out function.		E6- Apply understanding of principles of how molecular and cell assemblies, organs, and organisms develop structure and carry out function.																																		
x																																	x	x		
																																	x	x		
x																																	x	x		
x																																				
x		E7- Explain how organisms sense and control their internal environment and how they respond to external change.																																		
x																					x		x											x	x	
x																																		x	x	
x																																		x	x	
x		E8- Demonstrate an understanding of how the organizing principle of evolution by natural selection explains the diversity of life on earth.																																		
x																																				
x																																				

Mathematics														Philosophy and Religion	Physics and Astronomy															
Math 121	Math 125	Math 261	Math 262	Math 263	Math 264	Math 267	Math 268	Math 301	Math 302	Math 305	Math 319	Math 353	Math 375	Phil 103	Phys 211	Phys 212	Phys 221	Phys 222	Phys 213	Phys 214	Phys 223	Phys 224	Phys 303	Phys 308	Phys 309	Phys 310	Phys 313	Phys 315	Phys 317	Phys 318	Phys 319
College Algebra	Basic Mathematics for Science and Engineering	Unified Calculus & Analytic Geometry I	Unified Calculus & Analytic Geometry II	Unified Calculus and Analytic Geometry 3	Unified Calculus and Analytic Geometry 4	Calculus for Business, Economics, and Accountancy 1	Calculus for Business, Economics, and Accountancy 2	Discrete Mathematics	Applied Modern Algebra	Foundations of Math	Introduction to Algebra	Elementary and Differential Equations	Introduction to Statistical Methods	Logic: Critical Thinking	Physics for Science and Engineering 1	Physics for Science and Engineering 2	Lab for Science and Engineering 1	Lab for Science and Engineering 2	General Physics 1	General Physics 2	Laboratory Physics 1	Laboratory Physics 2	Physical Theory	Mathematical Physics	Thermodynamics	Mechanics	Physics and Biophysics of Air and Water	Radiation Science	Introduction to Modern Physics 1	Introduction to Modern Physics 2	Optics
					Math 263		Math 267		Math 301	Math 262	Math 262		Math 261	No	MA 261	Phys 211, MA 261	MA 261	Phys 211, Phys 221	(MA 121 & MA 123) or MA 125 or MA 261	Phys 213	(MA 121 & MA 123) or MA 125 or MA 261	Phys 213, Phys 223	No	Phys 212	Phys 212	Phys 212, MA 353	Phys 212 or Phys 214	MA 262 and (Phys 212 or 214)	MA 262, Phys 212	MA 263, Phys 317	MA 262, (Phys 212 or 214)
No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	No	BS/BA*	BS/BA*	BS/BA*	BS/BA*	BA*	BA*	BA*	BA*	BA*	BS	BS	BS			BS	BS	BS
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world															E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world															
X	X	X	X	X	X	X	X	X	X	X	X	X	X		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
X	X	X	X	X	X	X	X	X	X	X	X	X			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
																	x	x			x	x		x	x						
															x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
								X	X					X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		X	X	X	X		X					X			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
E2- Demonstrate understanding of the process of scientific inquiry, and explain how scientific knowledge is discovered and validated.																			E2- Demonstrate understanding of the process of scientific inquiry, and explain how scientific knowledge is discovered and validated.											
																	x	x			x	x									
																	x	x			x	x									
																	x	x			x	x									x
														X																	
E3- Demonstrate knowledge of basic physical principles and their applications to the understanding of living systems.															E3- Demonstrate knowledge of basic physical principles and their applications to the understanding of living systems.															
															x		x		x		x		x			x	x				
																x		x		x		x									
																x		x		x		x									x
																							x		x		x				
																												x	x	x	x
																											x				
E4- Demonstrate knowledge of basic principles of chemistry and some of their applications to the understanding of living systems.																															
																												x	x	x	
																													x		
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E5- Demonstrate knowledge of how biomolecules contribute to the structure and function of cells.																															
																											x				
E6- Apply understanding of principles of how molecular and cell assemblies, organs, and organisms develop structure and carry out function.																															
E7- Explain how organisms sense and control their internal environment and how they respond to external change.																															
E8- Demonstrate an understanding of how the organizing principle of evolution by natural selection explains the diversity of life on earth.																															
																	* **Required for Major**: BA majors may take the 211/212/221/222 sequence or the 213/214/223/224/303 sequence											

										Political Science	Psychology						Sociology and Antropology		
Phys 321	Phys 401	Phys 402	Phys 413	Phys 415	Phys 417	Phys 425	Phys 451	Phys 463	Phys 464	Pol 251	Psy 202	Psy 319	Psy 322	Psy 390	Psy 392	Psy 394	Soc 365	Anth 305	
Electronics	Electromagnetic Theory 1	Electromagnetic Theory 2	Introduction to Biophysics	Radiation Physics Lab	Modern Physics Lab	Nuclear and Particle Physics Laboratory	Introduction to Quantum Mechanics	Senior Research Project	Senior Research Project	Intro to Political Science Methods	Elemenary Statistics	Brain and Behavior	Drugs and Behavior	Lab in Psy: Behavioral Neuroscience	Lab in Psy: Experimental Social Psy	Lab in Psy: Cognition and Perception	Social Research Methods	Archaeology	**Entering Student Competency (E1, E2, E3,…) and Learning Objectives (1,2,3..)**
MA 262, (Phys 212 or 214)	Phys 212, MA 264	Phys 212, MA 264	MA 262, (Phys 212 or 214)	Phys 315	Phys 317	Phys 318	Phys 308, Phys 318, MA 353				Math ACT 22 or Math 115 or higher	Bisc 102 or Bisc 160 or Psy 201	9 hours of Psy courses	Psy 201,Psy 202, Psy 319 or Psy 322	Psy 201,Psy 202, Psy 315 or Psy 321 or Psy 324 or Psy 340	Psy 201, Psy 202, Psy 320 or Psy 326	Soc 101		
	BS	BS					BS			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	If room available	If room available	
								x	x										**E1- Apply quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world**
x	x	x	x	x	x	x	x	x	x	X									1. Demonstrate quantitative numeracy and facility with the language of mathematics.
x	x	x	x	x	x	x	x	x	x	X	X			X	X	X			2. Interpret data sets and communicate those interpretations using visual and other appropriate tools.
x				x	x	x		x	x	X	X			X	X	X			3. Make statistical inferences from data sets.
								x	x										4. Extract relevant information from large data sets.
x	x	x	x	x	x	x	x	x	x										5. Make inferences about natural phenomena using mathematical models.
x	x	x	x	x	x	x	x	x	x	X									6. Apply algorithmic approaches and principles of logic (including the distinction between cause/effect and association) to problem solving.
x	x	x	x	x	x	x	x	x	x										7. Quantify and interpret changes in dynamical systems.
	E2- Demonstrate understanding of the process of scientific inquiry, and explain							x	x										**E2- Demonstrate understanding of the process of scientific inquiry, and explain how scientific knowledge is discovered and validated.**
x				x	x	x		x	x					X	X	X	X	X	1. Develop observational and interpretive skills through hands-on laboratory or field experiences.
x				x	x	x		x	x										2. Demonstrate ability to measure with precision, accuracy, and safety.
x				x	x	x		x	x										3. Be able to operate basic laboratory instrumentation for scientific measurement.
								x	x			X		X	X	X	X	X	4. Be able to articulate (in guided inquiry or in project-based research) scientific questions and hypotheses, design experiments, acquire data, perform data analysis, and present results.
								x	x			X		X	X	X	X	X	5. Demonstrate the ability to search effectively, to evaluate critically, and to communicate and analyze the scientific literature.
			x																**E3- Demonstrate knowledge of basic physical principles and their applications to the understanding of living systems.**
																			1. Demonstrate understanding of mechanics as applied to human and diagnostic systems.
x	x	x										X							2. Demonstrate knowledge of the principles of electricity and magnetism (e.g., charge, current flow, resistance, capacitance, electrical potential, and magnetic fields).
	x	x	x																3. Demonstrate knowledge of wave generation and propagation to the production and transmission of radiation.
			x																4. Demonstrate knowledge of the principles of thermodynamics and fluid motion.
			x	x	x	x	x												5. Demonstrate knowledge of principles of quantum mechanics, such as atomic and molecular energy levels, spin, and ionizing radiation.
x			x									X							6. Demonstrate knowledge of principles of systems behavior, including input–output relationships and positive and negative feedback.
	E4- Demonstrate knowledge of basic principles of chemistry and some of their applications to the understanding of living systems.																		**E4- Demonstrate knowledge of basic principles of chemistry and some of their applications to the understanding of living systems.**
				x	x	x	x												1. Demonstrate knowledge of atomic structure.
																			2. Demonstrate knowledge of molecular structure.
			x									X							3. Demonstrate knowledge of molecular interactions.
			x																4. Demonstrate knowledge of thermodynamic criteria for spontaneity of physical processes and chemical reactions and the relationship of thermodynamics to chemical equilibrium.
												X							5. Demonstrate knowledge of principles of chemical reactivity to explain chemical kinetics and derive possible reaction mechanisms.
																			6. Demonstrate knowledge of the chemistry of carbon-containing compounds relevant to their behavior in an aqueous environment.
	E5- Demonstrate knowledge of how biomolecules contribute to the structure and function of cells.																		**E5- Demonstrate knowledge of how biomolecules contribute to the structure and function of cells.**
			x																1. Demonstrate knowledge of the structure, biosynthesis, and degradation of biological macromolecules.
												X	X	X	X	X			2. Demonstrate knowledge of the principles of chemical thermodynamics and kinetics that drive biological processes in the context of space (i.e., compartmentation) and time: enzyme-catalyzed reactions and metabolic pathways, regulation, integration, and the chemical logic of sequential reaction steps.
																			3. Demonstrate knowledge of the biochemical processes that carry out transfer of biological information from DNA, and how these processes are regulated.
																			4. Demonstrate knowledge of the principles of genetics and epigenetics to explain heritable traits in a variety of organisms.
	E6- Apply understanding of principles of how molecular and cell assemblies, organs, and organisms develop structure and carry out function.																		**E6- Apply understanding of principles of how molecular and cell assemblies, organs, and organisms develop structure and carry out function.**
																			1. Employ knowledge of the general components of prokaryotic and eukaryotic cells, such as molecular, microscopic, macroscopic, and three-dimensional structure, to explain how different components contribute to cellular and organismal function.
												X	X						2. Demonstrate knowledge of how cell–cell junctions and the extracellular matrix interact to form tissues with specialized function.
																			3. Demonstrate knowledge of the mechanisms governing cell division and development of embryos.
			x																4. Demonstrate knowledge of the principles of biomechanics and explain structural and functional properties of tissues and organisms.
	E7- Explain how organisms sense and control their internal environment and how they respond to external change.																		**E7- Explain how organisms sense and control their internal environment and how they respond to external change.**
																			1. Explain maintenance of homeostasis in living organisms by using principles of mass transport, heat transfer, energy balance, and feedback and control systems.
												X	X						2. Explain physical and chemical mechanisms used for transduction and information processing in the sensing and integration of internal and environmental signals.
													X						3. Explain how living organisms use internal and external defense and avoidance mechanisms to protect themselves from threats, spanning the spectrum from behavioral to structural and immunologic responses.
	E8- Demonstrate an understanding of how the organizing principle of evolution by natural selection explains the diversity of life on earth.																		**E8- Demonstrate an understanding of how the organizing principle of evolution by natural selection explains the diversity of life on earth.**
																			1. Explain how genomic variability and mutation contribute to the success of populations.
																			2. Explain how evolutionary mechanisms contribute to change in gene frequencies in populations and to reproductive isolation.