

TMU Student Assessment Data Summary
 from Fall, 2014 to Fall, 2017, for the
BS in Biological Sciences Degree Programs

A. Biological Sciences Core Program-Level Learning Outcomes

ID:	Description:	Weight	Num. Obs.	Distribution of Observations							% at 5, 6 or 7	Avg.	95% Confidence Interval		Stat. Signif. Means?
				1	2	3	4	5	6	7			Low	High	
BIO1	Demonstrate a working knowledge of the biological taxonomic kingdom and phyla divisions, and classification of organisms within that system.														
BIO1			35								68.6	4.97			N/A
BIO1.8	Taxonomy Exam	65%	35	0	3	2	6	8	14	2	68.6	4.97	4.52	5.42	
BIO2	Demonstrate an in-depth knowledge of the key features and current issues related to the various major theories of biological origins.														
BIO2			27								96.3	5.59			NO
BIO2.1	Origins Paper	65%	20	1	0	0	0	5	14	0	95.0	5.5	5.00	6.00	
BIO2.2	Senior Survey	6%	7	0	0	0	0	0	3	4	100	6.57	6.17	6.97	
BIO3	Demonstrate a working knowledge of the key current issues in environmental biology and ecology.														
BIO3			80								62.5	5.03			YES
BIO3.1	Environmental Biology/Ecology Current Issues	35%	17	0	0	0	0	6	11	0	100	5.65	5.42	5.88	
BIO3.2	Senior Survey	6%	6	0	0	0	0	1	4	1	100	6	5.49	6.51	
BIO3.8	CAFE Data	3%	7	0	0	0	1	3	3	0	85.7	5.29	4.73	5.85	
BIO3.9	ETS Biology MFT - Population Biology, Evolution & Ecology Sub-score	20%	46	12	5	5	7	8	6	3	37.0	3.52	2.94	4.10	
BIO3.10	Environmental Biology/Ecology Current Issues	10%	4	0	0	0	0	3	1	0	100	5.25	4.76	5.74	

BIO5	Analyze molecular structure and chemical reactivity relationships within a chemical and biological environment.														
BIO5			107									68.2	4.55		YES
BIO5.1	Senior Survey	6%	7	0	0	0	0	0	2	5	100	6.71	6.35	7.07	
BIO5.9	CAFE Data	3%	56	0	0	2	7	26	19	2	83.9	5.21	4.99	5.43	
BIO5.10	Organic Chemistry Exam	65%	44	0	5	9	11	7	10	2	43.2	4.32	3.89	4.75	
BIO6	Demonstrate a working knowledge of cellular structures and processes within cells.														
BIO6			217									71.9	4.92		YES
BIO6.2	Senior Survey	6%	7	0	0	0	0	0	4	3	100	6.43	6.03	6.83	
BIO6.7	CAFE Data	3%	92	0	1	4	11	30	37	9	82.6	5.36	5.15	5.57	
BIO6.8	Cell Structure Exam	45%	72	3	3	3	11	18	17	17	72.2	5.18	4.81	5.55	
BIO6.9	ETS Biology MFT - Cell Biology Sub-score	20%	46	12	4	5	4	5	12	4	45.7	3.83	3.20	4.46	
BIO8	Perform and interpret analyses of the various modes of Mendelian inheritance.														
BIO8			133									78.2	5.04		YES
BIO8.2	Senior Survey	6%	8	0	0	0	0	1	7	0	100	5.88	5.63	6.13	
BIO8.7	CAFE Data	3%	38	0	0	0	1	11	19	7	97.4	5.84	5.60	6.08	
BIO8.9	Scanned Final Course Exam	25%	41	0	0	1	4	14	18	4	87.8	5.49	5.22	5.76	
BIO8.10	ETS Biology MFT - Molecular Biology & Genetics Sub-score	20%	46	6	7	1	9	11	9	3	50.0	4.11	3.57	4.65	
BIO9	Demonstrate a working knowledge of those basic principles of physics, statistics, and differential and integral calculus necessary to the study and practice of research in the biological sciences.														
BIO9			10									90.0	5.8		N/A
BIO9.1	Senior Survey	6%	10	0	0	0	1	1	7	1	90.0	5.8	5.31	6.29	

BIO12	Effectively prepare written and oral presentations from primary research literature in the biological sciences.														
BIO12			204									92.6	5.88		YES
BIO12.1	Power Point Research Topic	35%	37	0	0	0	3	7	20	6	91.9	6.11	5.46	6.76	
BIO12.2	Senior Survey	6%	8	0	0	0	0	0	4	4	100	6.5	6.13	6.87	
BIO12.6	CAFE Data	3%	111	0	1	4	6	39	48	13	90.1	5.51	5.33	5.69	
BIO12.7	Biology Research Paper	30%	48	0	0	1	0	29	9	9	97.9	5.52	5.27	5.77	
BIO13	Explain in accurate detail the molecular basis of inheritance; including DNA replication, transcription, translation and the regulation of these processes.														
BIO13			98								69.4	5.00		YES	
BIO13.2	Senior Survey	6%	11	0	0	0	0	1	4	6	100	6.45	6.04	6.86	
BIO13.8	Scanned Final Course Exam	25%	41	0	0	1	6	15	15	4	82.9	5.37	5.08	5.66	
BIO13.9	ETS Biology MFT - Molecular Biology & Genetics Sub-score	20%	46	6	7	1	9	11	9	3	50.0	4.11	3.57	4.65	

B. Natural History / Environmental Biology Emphasis Program-Level Learning Outcomes

ID:	Description:	Weight	Num. Obs.	Distribution of Observations							% at 5, 6 or 7	Avg.	95% Confidence Interval		Stat. Signif. Means?
				1	2	3	4	5	6	7			Low	High	
BIOENVR2	Effectively conduct selected field research techniques in plant and animal ecology.														
BIOENVR2			7								85.7	5.14			N/A
BIOENVR2.6	CAFE Data	3%	7	0	0	0	1	4	2	0	85.7	5.14	4.63	5.65	
BIOENVR3	Demonstrate a working knowledge of the inter-relationship among species, population dynamics, and the study of human impacts on eco-systems as it relates to stewardship ecology.														
BIOENVR3			7								71.4	5.14			N/A
BIOENVR3.6	CAFE Data	3%	7	0	0	0	2	2	3	0	71.4	5.14	4.47	5.81	

C. Pre-Medicine / Pre-Dentistry Emphasis Program-Level Learning Outcomes

ID:	Description:	Weight	Num. Obs.	Distribution of Observations							% at 5, 6 or 7	Avg.	95% Confidence Interval		Stat. Signif. Means?
				1	2	3	4	5	6	7			Low	High	
BIOPM1	Explain in detail the mechanisms involved in the replication and regulation of expression of genetic information for both prokaryotes, eukaryotes, and viruses.														
BIOPM1			4								100	6.25			N/A
BIOPM1.1	Senior Survey	6%	4	0	0	0	0	1	1	2	100	6.25	5.31	7.19	
BIOPM2	Describe the theoretical basis underlying and perform basic laboratory procedures used in molecular biology, biochemistry, microbiology and biotechnology.														
BIOPM2			3								100	6.33			N/A
BIOPM2.1	Senior Survey	6%	3	0	0	0	0	0	2	1	100	6.33	5.68	6.98	
BIOPM3	Compare and contrast the initial pathways of development found in organisms from invertebrates to mammals.														
BIOPM3			4								50.0	4.5			N/A
BIOPM3.3	Senior Survey	6%	4	0	0	1	1	1	1	0	50.0	4.5	3.23	5.77	
BIOPM4	Describe the underlying thermodynamic principles that govern biochemical pathways. Describe how biochemical pathways are regulated and integrated to maintain homeostasis.														
BIOPM4			4								100	6.75			N/A
BIOPM4.2	Senior Survey	6%	4	0	0	0	0	0	1	3	100	6.75	6.26	7.24	
BIOPM5	Demonstrate a working knowledge of the functions of each organ system and their interrelationships in the whole organism to maintain physiological homeostasis.														
BIOPM5			3								100	5.33			N/A
BIOPM5.3	Senior Survey	6%	3	0	0	0	0	2	1	0	100	5.33	4.68	5.98	

D. Secondary Teacher Education in Life Sciences Emphasis Program-Level Learning Outcomes

				Distribution of Observations									95% Confidence Interval		Stat. Signif. Means?
ID:	Description:	Weight	Num. Obs.	1	2	3	4	5	6	7	% at 5, 6 or 7	Avg.	Low	High	
BIOTE2	Effectively conduct selected field research techniques in plant and animal ecology.														
BIOTE2			7								100	5.71			N/A
BIOTE2.6	CAFE Data	3%	7	0	0	0	0	3	3	1	100	5.71	5.15	6.27	
BIOTE3	Demonstrate a working knowledge of the inter-relationship among species, population dynamics, and the study of human impacts on eco-systems as it relates to stewardship ecology.														
BIOTE3			7								71.4	5.14			N/A
BIOTE3.6	CAFE Data	3%	7	0	0	0	2	3	1	1	71.4	5.14	4.35	5.93	

E. Molecular, Cellular, & Developmental Biology Emphasis Program-Level Learning Outcomes

ID:	Description:	Weight	Num. Obs.	Distribution of Observations							% at 5, 6 or 7	Avg.	95% Confidence Interval		Stat. Signif. Means?
				1	2	3	4	5	6	7			Low	High	
BPSCI1	Explain in detail the mechanisms involved in the replication and regulation of expression of genetic information for both prokaryotes, eukaryotes, and viruses.														
BPSCI1			1								100	6			N/A
BPSCI1.1	Senior Survey	6%	1	0	0	0	0	0	1	0	100	6	6	6	
BPSCI2	Describe the theoretical basis underlying and perform basic laboratory procedures used in molecular biology, biochemistry, microbiology and biotechnology.														
BPSCI2			1								100	6			N/A
BPSCI2.1	Senior Survey	6%	1	0	0	0	0	0	1	0	100	6	6	6	
BPSCI4	Describe the underlying thermodynamic principles that govern biochemical pathways. Describe how biochemical pathways are regulated and integrated to maintain homeostasis.														
BPSCI4			41								68.3	4.86			NO
BPSCI4.2	Senior Survey	6%	1	0	0	0	0	0	1	0	100	6	6	6	
BPSCI4.8	Scanned Comprehensive Final Exam	65%	40	2	3	1	7	14	10	3	67.5	4.75	4.28	5.22	
BPSCI5	Demonstrate a working knowledge of the functions of each organ system and their interrelationships in the whole organism to maintain physiological homeostasis.														
BPSCI5			28								89.3	5.32			N/A
BPSCI5.17	Scanned Comprehensive Final Exam	23%	28	0	0	1	2	12	13	0	89.3	5.32	5.03	5.61	