Program Review Form

Date: August 17, 2017
Program Review Year: 2017-2018
Name of Program Being Reviewed: Biology
Degrees Covered by Review: BS Biology 3 programs
Name of Department: Arts and Sciences
Department Chair: Ian Hawkins
Program Coordinator: Ian Hawkins

Note: Pages 1-4 are to be completed yearly by each program. Pages 1-5 are to be completed according to the Cycle of Curricular Review

Mission of the College

The mission of Free Will Baptist Bible College is to educate leaders to serve Christ, His Church, and His world through Biblical thought and life.

Strategic Initiative (from the strategic plan)
Strategic Initiative #1 – Integrating a Christian worldview.

The College will develop policies, programs, and activities which will enable students to develop a worldview that integrates the Christian faith with the academic disciplines in the whole of life.

Strategic Objective (from the strategic plan)
Strategic Objective 1.1 – Develop curricula that integrates the Christian worldview throughout all programs of study.

Program Objectives (from the College Catalog)

Graduates should be able to:

1. Demonstrate significant proficiency in areas of science which support the field of biology
2. Apply scientific knowledge and principles in the context of the field of biology
3. Synthesize biblical values, general knowledge, and scientific principles to support a career in biology

Program Objectives link to Institutional Purpose/General Objectives of the College

The following college general objectives as per the catalog are directly linked to the program goals:

1. A Christian worldview, manifested in an awareness of its implications for thought and life.
2. An informed mind, manifested in critical thinking and intellectual honesty.
3. The knowledge and skills needed to function effectively in one's chosen vocation.

These college objectives are met in our program objectives by giving our students the tools and understanding to be competent in the field of biology, as well as to think critically with a Christian worldview, and to apply this knowledge in the career path of choice.

Program Objectives link to Departmental Objectives

The following objectives of the Department of Arts and Sciences are directly linked to the Biology program objectives:

1. Understand and use basic mathematical-scientific principles, especially as they relate directly to the environment

These department objectives are met in our program objectives by giving our students the tools and understanding to be competent in the field of biology, as well as to think critically with a Christian worldview, and to apply this knowledge in the career path of choice.

Courses Aimed to Accomplish Specific Program Objectives

Program Objective	Courses
Demonstrate significant proficiency in areas of science which support the field of biology	BIO 1101-1111, 1202-1212, 2106-2116, 2204, 2401-2411, 2502-2512, 3103-3113, 3205, 3304-3314, 4006-4016, 4105-4115, 4502 CHE 1004-1014, 1105-1115, 2003-2013, 2106-2116 PHY 2003-2013, 2106-2116
Apply scientific knowledge and principles in the context of the field of biology	BIO 1111, 1212, 2116, 2411, 2512, 3113, 3314, 4016, 4115 CHE 1014, 1115, 2013, 2116 PHY 2013, 2116
Synthesize biblical values, general knowledge, and scientific principles to support a career in biology	BIO 3205, 4502 BIB all classes ENG 2111, 2122

Program Review: Assessment

Program Objective	**Means of Assessment**	**Strategic Objective/Goal (2017/2018)**	**Results (2017/2018-2018/2019)**
What we want to do (general)	How we will know if we did it	Specific Goals	What actually happened
Demonstrate significant proficiency in areas of science which support the field of biology	Major Field Tests	All students will score above the national average	**0/3 All three students who graduated scored below the 50 percentile but 2/3 students were in the national average score range**
Apply scientific knowledge and principles in the context of the field of biology	Major Field Tests	All students will score above the national average	**0/3 All three students who graduated scored below the 50 percentile but 2/3 students were in the national average score range**
Synthesize biblical values, general knowledge, and scientific principles to support a career in biology	Capstone paper in BIO 4502 class	All students will be able to articulate how their Christian worldview affects their scientific endeavors by scoring at 80% on the final capstone paper.	**All students scored 80% or higher on capstone paper.**

Program Review: Use of Results

Strategic Objective/Goal (2017/2018)	**Results (2017/2018-2018/2019)**	**Use of Results (2019/2020)**	**Results Revisited (2019/2020)**
What we wanted to happen	What actually happened	What we did to improve	How did this affect later assessments?
All students will score above the national average	**0/3 All three students who graduated scored below the 50 percentile but 2/3 students were in the national average score range**	Since we only had 3 students, we will continue to monitor this. The test is broken down into four sections but looking over the last few years there is no pattern to which section is the lowest score. (Cell Biology, Molecular Biology, Organismal Biology, and Evolution/Ecology)	We had no students graduate this year but 3 students will finish this coming fall.
All students will score above the national average	**0/3 All three students who graduated scored below the 50 percentile but 2/3 students were in the national average score range**	Same as above	We had no students graduate this year but 3 students will finish this coming fall.
All students will be able to articulate how their Christian worldview affects their scientific endeavors by scoring at 80% on the final capstone paper.	**All students scored 80% or higher on capstone paper.**	We will make no changes.	We had no students graduate this year but 3 students will finish this coming fall.

Program Review: Comparison with Other Similar Programs

The following comparisons were made to other programs. There were only minor differences but we are going to recommend to remove the college algebra requirement and include both Calculus and Statistics for Pre-Health and Cell and Molecular. We are emphasizing to students the need for doing research but due to Welch's limited resources these students are given opportunities off campus.

Pre-Health Comparison	Welch Pre-health	Belmont	Trevecca	Biola
Gen BIO I and II and labs	8	8	8	8
Microbiology and lab 200	4	4	4	4
Genetics	3	4	4	4
A&P I and II and labs	8	8		4 (physiology)
Ecology and Lab	4		4	4
Cell Biology	4			
Evolution	3			
Molecular Biology and Lab	4	4	4	4
Biochemistry and Lab	4			
Senior Seminar	1	1	1	1
Others		4 (Research)	12 hours electives	Research
		4(Elective)		Vertabrate Physiology
				Advanced Microbiology
Gen Chem I and II and lab	8	8	8	8
Org Chem I and II and lab	8		8	8
Physics I and II and lab	8		8	8
Algebra	3			
Calculus	either	4	4	7
Statistics		3	3	4

Cell and Molecular emphasis	Welch Cell and Mol	Belmont Biochem and Molecular	Trevecca Biology Major	Biola Biological Sciences
Gen BIO I and II and labs	**8**	**8**	**8**	**8**
Microbiology and lab 200	**4**	**4**	**4**	**4**
Genetics	**3**	**4**	**4**	**4**
A&P I and II and labs	**8**	**4 (physiology)**		**4 (physiology) 4 Vertebrate Physiology**
Ecology and Lab	**4**		**4**	**4**
Cell Biology	**4**	4		
Evolution	**3**			
Molecular Biology and Lab	**4**	**4**	**4**	**4**
Biochemistry and Lab	**4**	7		
Senior Seminar	**1**	**1**	**1**	**1**
Others		**4 (Research)**	**12 hours electives**	**Research**
		4 (Biophysical Chemistry		**Botany**
		3 (elective)		**Advanced Microbiology**
Gen Chem I and II and lab	**8**	**8**	**8**	**8**
Org Chem I and II and lab	**4**	8	**8**	**8**
Physics I and II and lab	**4**		**4**	**8**
Algebra	**3**			
Calculus	**either**	**4**	**4**	**7**
Statistics		**3**	**3**	**6**

We noticed some differences in our secondary education degrees and are recommending removing Cell Biology, Biochemistry, Physical Science, and College Algebra. We will be adding Anatomy and Physiology I and II, Physics I, Organic I, and requiring Calculus and Statistics. This will make our courses 49 hours which is more in line with other programs.

Secondary Education	Welch Secondary	Belmont	Trevecca	Biola
Gen BIO I and II and labs	8	8	8	8
Genetics	3	4	4	4
Ecology and Lab	4	4	4	4
Cell Biology	4			
Evolution	2			
Biochemistry and Lab	4			
Senior Seminar	1	1	2	1
physical science	4		4	4 (environmental)
Anatomy and Physiology		4		4
Other		4 (Zoology or Botany)	3 (issues in Science)	4 (Botany)
		7 (Electives)	4 Micro	
		4 (Research)		Advanced Microbiology
Gen Chem I and II and lab	8	8	4	8
Physics I		4	4	8
Organic Chemistry			4	4
Algebra	3			
Calculus	either	4	4	
Statistics		3		6
Total	44	55	45	51

Program Review: Analysis of Graduate School/Vocational Requirements

Graduate school requirements are looked at on an individual basis through advising since each graduate school requires different courses. For physical therapy and physician assistant programs we have used the national organizations websites to compare our courses to make sure we have all pre-requisites for any national program. We also are always checking with medical schools locally and also where our students want to go an we have always had all pre-requisites. One course that has come up a few times has been medical terminology. This is not a required pre-requisite but one that is recommended and so we will be proposing to add this course over summers on an as needed basis.