

Bachelor of Science Program in Biology
Revised Curriculum 2004
(Regular Program)

1. General Education Courses		32	credits
		Credit (Lecture-Lab)	
Social Science and Humanities (6 credits)			
SHHU 123	Integrated Humanities I	3	(3-0)
SHSS 145	Integrated Social Science	3	(3-0)
Management Courses (3 credits)			
MGID 101	Administration and General Management	3	(3-0)
Language Courses (12 credits)			
SCLG 131	Introductory University English I	3	(2-2)
SCLG 132	Introductory University English II	3	(2-2)
SCLG 231	Intermediate University English I	3	(2-2)
SCLG 232	Intermediate University English II	3	(2-2)
Science and Mathematics Courses (11 credits)			
SCCH 155	Microcomputer Applications	3	(3-0)
SCMA 113	Calculus	3	(3-0)
SCMA 114	Ordinary Differential Equations	3	(3-0)
SCMA 150	Introduction to Statistics	2	(2-0)
2. Specialized Courses		92	credits
<u>Required Courses (68 credits)</u>			
SCBI 106	General Biology I	3	(3-0)
SCBI 102	Biology Laboratory I	1	(0-3)
SCBI 108	General Biology II	3	(3-0)
SCBI 104	Biology Laboratory II	1	(0-3)
SCBI 270	Basic Cell and Molecular Biology	4	(4-0)
SCBI 302	Invertebrate Zoology	4	(3-3)
SCBI 305	Vertebrate Zoology	4	(3-3)
SCBI 314	Biostatistics	3	(3-0)
SCBI 340	General Genetics	3	(3-0)
SCBI 399	General Ecology	3	(2-3)
SCBI 411	Evolution	3	(3-0)
SCBI 491	Seminar in Biology I	1	(1-0)
SCBI 492	Seminar in Biology II	1	(1-0)
SCBI 495	Senior Project in Biology	3	(0-9)
SCBC 203	Basic Biochemistry	3	(3-0)
SCBC 204	Basic Biochemistry Laboratory	1	(0-3)
SCMA 150	Introduction to Statistics	2	(2-0)
SCCH 103	General Chemistry I	3	(3-0)
SCCH 104	General Chemistry II	3	(3-0)
SCCH 108	Chemistry Laboratory I	1	(0-3)
SCCH 109	Chemistry Laboratory II	1	(0-3)
SCCH 121	Basic Organic Chemistry	3	(3-0)
SCCH 128	Organic Chemistry Laboratory	1	(0-3)
SCMI 203	Basic Microbiology	3	(2-3)
SCPL 286	General Botany	3	(3-0)
SCPL 287	General Botany Laboratory	1	(0-3)
SCPY 110	Physics Laboratory I	1	(0-3)
SCPY 120	Physics Laboratory II	1	(0-3)
SCPY 151	General Physics I	3	(0-3)

SCPY 152	General Physics II	3	(3-0)
<u>Elective Courses in Biology (24 credits)</u>		Credit (Lecture-Lab)	
SCBI 209	Genetics and Development	4	(4-0)
SCBI 304	Marine Science	4	(3-3)
SCBI 306	Experimental Embryology	4	(3-3)
SCBI 310	Principles of Plant Physiology	4	(3-3)
SCBI 317	Developmental Biology	3	(3-0)
SCBI 327	Principles of Animal Physiology	4	(3-3)
SCBI 343	Natural Resource and Environmental Management	3	(3-0)
SCBI 350	Host-Microbe Interactions	3	(2-3)
SCBI 352	Microtechnique in Biology	3	(2-3)
SCBI 355	Parasitology	4	(3-3)
SCBI 356	Basic Entomology	4	(3-3)
SCBI 360	Basic Environmental Science	2	(2-0)
SCBI 361	Water Quality Management	3	(2-3)
SCBI 363	Environmental Microbiology	3	(2-3)
SCBI 364	Environmental Education : Theory and Practice	3	(3-2)
SCBI 371	Basic Techniques in Molecular Biology	1	(0-3)
SCBI 372	Molecular Biology Applications	3	(3-0)
SCBI 414	Principles of Plant Tissue Culture	4	(2-6)
SCBI 440	Industrial Microbiology	3	(2-3)
SCBI 453	Coevolution	2	(2-0)
SCBI 454	Vector Biology	4	(3-3)
SCBI 455	Biological Control	3	(3-0)
SCBI 456	Integrated Pest Management	3	(3-0)
SCBI 463	Basic Conservation Biology	3	(3-0)
SCBI 464	Ecology of Tropical Forests	3	(2-3)
SCBI 465	Tropical Wildlife Management	3	(2-3)
SCBI 466	Interdisciplinary Approaches to Biodiversity	3	(3-0)
SCBI 470	Basic Immunology	3	(2-3)
SCBI 482	Special Topics in Biology	3	(3-0)
<u>Other Elective Courses</u>			
SCBT 201	Introductory Biotechnology	2	(2-0)
SCBT 302	Microbial Physiology and Genetics	4	(2-6)
SCBT 305	Industrial Biotechnology	3	(3-0)
SCBT 309	Animal Cell Technology	3	(3-0)
SCBT 352	Food Science	2	(2-0)
SCBT 401	Bioinformatics	3	(2-3)
SCBT 407	Plant Biotechnology	3	(2-3)
SCBT 434	Waste Management	2	(2-0)

3. Free Elective Courses

From the following courses, 6-12 credits may be selected according to the student's interest.

		Credit (Lecture-Lab)	
SHED 125	Physical Education Activity-Volleyball	1	(0-2)
SHED 126	Physical Education Activity-Pataunque	1	(0-2)
MSID 102	Chorus	1	(0-2)
MSID 103	Fundamental of Western Music Performance	1	(0-2)
MSID 104	Fundamental of Thai Music Performance	1	(0-2)

SCCS 101	Computer Programming	3	(3-0)
SCLG 402	Business English	2	(2-0)

Credit (Lecture-Lab)

SCLG 403	Social English	2	(2-0)
SCLG 404	Public Speaking and Oral Communication	2	(2-0)

And other courses offered in the University, with the approval of the Department.

Minors

A. Minors in Biology

Students who wish to take biology as a minor have to take upper level biology courses for at least 15 credits. They have to pass the prerequisite courses and have the GPA of at least 2.75.

Prerequisite Biology Courses

SCBI 106	General Biology I	3	(3-0)
SCBI 102	Biology Laboratory I	1	(0-3)
SCBI 108	General Biology II	3	(3-0)
SCBI 104	Principles Laboratory II	1	(0-3)

Upper Level Biology and Related Courses

SCBI 270	Basic Cell and Molecular Biology	4	(4-0)
SCBI 302	Invertebrate Zoology	4	(3-3)
SCBI 305	Vertebrate Zoology	4	(3-3)
SCBI 340	General Genetics	3	(3-0)
SCBI 399	General Ecology	3	(2-3)
SCBI 411	Evolution	3	(3-0)
SCBC 203	Basic Biochemistry	3	(3-0)
SCMI 203	Basic Microbiology	3	(2-3)
SCPL 286	General Botany	3	(3-0)
SCPL 287	General Botany Laboratory	1	(0-3)

B. Biology Major, Minor in other Science Majors

Biology students can choose any minors offered at the Faculty of Science. They have to take minor courses for at least 15 credits which are equivalent to their elective biology courses. They have to notify the departments responsible for their minors before the third year and get their permission.

The Department has set study plan for courses in different modules according to students' interests and these courses will be very good basis for senior research project.

A. Molecular, Cell, and Developmental Biology

Credit (Lecture-Lab)

SCBI 30	Experimental Embryology	4	(3-3)
SCBI 317	Developmental Biology	3	(3-0)
SCBI 371	Basic Techniques in Molecular Biology	1	(0-3)
SCBI 372	Molecular Biology Applications	3	(3-0)
SCBI 470	Basic Immunology	3	(2-3)
SCBT 401	Bioinformatics	3	(2-3)

B. Organismal Biology

SCBI 304	Marine Science	4	(3-3)
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SCBI 310	Principles of Plant Physiology	4	(3-3)
SCBI 327	Principles of Animal Physiology	4	(3-3)
SCBI 352	Microtechnique in Biology	3	(2-3)
			Credit (Lecture-Lab)
SCBI 414	Principles of Plant Tissue Culture	4	(2-6)
SCBI 440	Industrial Microbiology	3	(2-3)
	C. Ecology, Evolution and Environmental Biology		
SCBI 343	Natural Resource and Environmental Management	3	(3-0)
SCBI 360	Basic Environmental Science	2	(2-0)
SCBI 361	Water Quality Management	3	(2-3)
SCBI 363	Environmental Microbiology	3	(2-3)
SCBI 364	Environmental Education : Theory and Practice	3	(2-3)
SCBI 453	Coevolution	2	(2-0)
SCBI 463	Basic Conservation Biology	3	(3-0)
SCBI 464	Ecology of Tropical Forests	3	(2-3)
SCBI 465	Tropical Wildlife Management	3	(2-3)
SCBI 466	Interdisciplinary Approaches to Biodiversity	3	(3-0)
	D. Vector Biology and Parasites		
SCBI 350	Host-Microbe Interactions	3	(2-3)
SCBI 355	Parasitology	4	(3-3)
SCBI 356	Basic Entomology	4	(3-3)
SCBI 454	Vector Biology	4	(3-3)
SCBI 455	Biological Control	3	(3-0)
SCBI 456	Integrated Pest Management	3	(3-0)

**Study Plan
First Year
First Semester**

		Credit (Lecture-Lab)	
SCBI 106	General Biology I	3	(3-0)
SCBI 102	Biology Laboratory I	1	(0-3)
SCCH103	General Chemistry I	3	(3-0)
SCCH 108	General Chemistry Laboratory I	1	(0-3)
SCLG 131	Introductory University English I	3	(2-2)
SCMA 113	Calculus	3	(3-0)
SCPY 151	General Physics I	3	(3-0)
SCPY 110	Physics Laboratory I	1	(0-3)
MSID 102	Chorus or	1	(0-2)
MSID 103	Fundamental of Western Music Ensemble or	1	(0-2)
MSID 104	Fundamental of Thai Music Performance	1	(0-2)
Total		<u>18(14-11) - 19(14-13)</u>	

Second Semester

SCBI 108	General Biology II	3	(3-0)
SCBI 104	Biology Laboratory II	1	(0-3)
SCCH 104	General Chemistry II	3	(3-0)
SCCH 109	Chemistry Laboratory II	1	(0-3)
SCLG 132	Introductory University English II	3	(2-2)
SCMA 114	Ordinary Differential Equations	2	(2-0)
SCPY 152	General Physics II	3	(3-0)
SCPY 120	Physics Laboratory II	1	(0-3)
SHHU 123	Integrated Humanities I	3	(3-0)
Total		<u>21(17-11)</u>	

**Second Year
First Semester**

		Credit (Lecture-Lab)	
SCCH 121	Basic Organic Chemistry	3	(3-0)
SCCH 128	Organic Chemistry Laboratory	1	(0-3)
SCLG 231	Intermediate University English I	3	(2-2)
SCMA 150	Introduction to Statistics	2	(2-0)
SCMI 203	Basic Microbiology	3	(2-3)
SCPL 286	General Botany	3	(3-0)
SCPL 287	General Botany Laboratory	1	(0-3)
SHSS 145	Integrated Social Science	3	(3-0)
Total		<u>19(15-11)</u>	

Second Semester

SCBC 203	Basic Biochemistry	3	(3-0)
SCBC 204	Basic Biochemistry Laboratory	1	(0-3)
SCBI 270	Basic Cell and Molecular Biology	4	(4-0)
SCCS 155	Microcomputer Applications	3	(3-0)

SCLG 232	Intermediate University English II	3	(2-2)
MGID 101	Administration and General Management	3	(3-0)
Total		17	(15-5)

**Third Year
First Semester**

		Credit (Lecture-Lab)	
SCBI 302	Invertebrate Zoology	4	(3-2)
SCBI 340	General Genetics	3	(3-0)
	Electives	10	
Total		17	

Module A

SCBI 371	Basic Techniques in Molecular Biology	1	(0-3)
SCBI 372	Molecular Biology Application	3	(3-0)

Module B

SCBI 304	Marine Science	4	(3-3)
SCBI 327	Principles of Animal Physiology	4	(3-3)
SCBI 352	Microtechnique in Biology	3	(2-3)

Module C

SCBI 360	Basic Environmental Science	3	(2-3)
SCBI 363	Environmental Microbiology	3	(3-0)
SCBI 364	Environmental Education : Theory and Practice	3	(2-3)

Module D

SCBI 350	Host-Microbe Interactions	3	(2-3)
SCBI 355	Parasitology	4	(3-3)

Second Semester

		Credit (Lecture-Lab)	
SCBI 305	Vertebrate Zoology	4	(3-3)
SCBI 314	Biostatistics	3	(3-0)
SCBI 399	General Ecology	3	(2-3)
	Electives	8	
Total		18	

Module A

SCBI 306	Experimental Embryology	4	(3-3)
SCBI 317	Developmental Biology	3	(3-0)
SCBT 309	Animal Cell Technology	3	(3-0)

Module B

SCBI 310	Principles of Plant Physiology	4	(3-3)
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Module C

SCBI 343	Natural Resource and Environmental Management	3	(3-0)
SCBI 361	Water Quality Management	3	(2-3)

Module D

SCBI 356	Basic Entomology	4	(3-3)
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Fourth Year (Regular Program)

First Semester

		Credit (Lecture-Lab)	
SCBI 491	Seminar in Biology I	1	(1-0)
	Electives or Free Electives	10	
Total		11	

Module A			
SCBT 401	Bioinformatics	3	(2-3)
Module B			
SCBI 414	Principles of Plant Tissue Culture	4	(2-6)
Module C			
SCBI 453	Coevolution	2	(2-0)
SCBI 463	Conservation Biology	3	(3-0)
SCBI 464	Ecology of Tropical Forests	3	(2-3)
Module D			
SCBI 455	Biological Control	3	(3-0)

Second Semester

		Credit (Lecture-Lab)	
SCBI 411	Evolution	3	(3-0)
SCBI 492	Seminar in Biology II	1	(1-0)
SCBI 495	Senior Project in Biology	3	(0-9)
	Electives or Free Electives	2	
	Total	9	

Module A			
SCBI 470	Basic Immunology	3	(2-3)
Module B			
SCBI 440	Industrial Microbiology	3	(2-3)
Module C			
SCBI 465	Tropical Wildlife Management	3	(2-3)
SCBI 466	Interdisciplinary Approaches to Biodiversity	3	(3-0)
Module D			
SCBI 454	Vector Biology	4	(3-3)
SCBI 456	Integrated Pest Management	3	(3-0)