Doctor of Philosophy Programme in Biology

(International Programme)

Adjusted in 2002

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1. Programme Curriculum

1.1. The number of credits required for the programme

1.1.1 students holding a Bachelor's degree must take no less than 76 credits.

1.1.2 students holding a Master's degree must take no less than 48 credits.

1.2. Curriculum Structure

The programme is set according to the Ministry of University Affairs Announcement titled "Standard criteria for Graduate Studies 1999", which specified Plan A(2)

1.2.1 For students holding a Bachelor's Degree

Required Courses	13 credits
Elective Courses	15 credits
Dissertation	48 credits
Total	**76 credits**

1.2.2 For students holding a Master's Degree

Required Courses	2 credits
Elective Courses	10 credits
Dissertation	36 credits
Total	**48 credits**

Note : For students holding a Master's Degree the programme committee will evaluate his previous academic record. If any courses or the equivalents required for students holding a Bachelor's had not been taken, the students must take these courses and pass with no less than B. And these courses can be counted as part of the electives.

1.3. Course Requirements

1.3.1. Required Courses

			Credits (lecture-lab)
SCID	504	Evolutionary and Environmental Biology	3 (3 - 0)
SCID	506	Biostatistics and Research Methodology	3 (2 – 2)
#SCBI	601	Seminar	1 (1 – 0)
GRID	612	Cell and Molecular Biology	3 (3 - 0)

 # Register for 4 semesters for students holding a Bacholer's degree and 2 semesters for students holding a Master's degree

1.3.2. Elective Courses

1.3.2.1. Genetics and Evolutionary Biology

			Credits (lecture-lab)
SCBI	541	Concepts of Genetics	3 (3 - 0)
SCBI	542	Principles of Evolution	3 (3 - 0)
SCBI	543	Population Genetics	3 (3 - 0)
SCBI	544	Ecological Genetics	3 (3 - 0)
SCBI	545	Cytogenetics	3 (2 - 3)
SCBI	606	Species and Speciation	2 (2 - 0)
SCBI	607	Evolutionary Genetics	3 (3 - 0)
SCBI	609	Molecular Genetics	3 (2 - 3)

1.3.2.2. Ecology and Conservation Biology

SCBI	505	Population and Community Ecology	3 (2 - 3)
SCBI	530	Conservation Biology	3 (3 - 0)
SCBI	531	Biology of Primates	3 (3 - 0)
SCBI	532	Basic Principles of Sociobiology	3 (3 - 0)
SCBI	535	Field Techniques in Animal Behavior	2 (1 - 3)
SCBI	536	Basic Principles of Animal Behavior	3 (2 - 3)
SCBI	540	Behavioral Ecology	3 (2 - 3)

1.3.2.3 Molecular Biology and Developmental Biology

SCID	501	Molecular Bioscience	3 (3 - 0)
SCID	502	Cell Science	3 (3 - 0)
SCID	503	Systemic Bioscience	3 (3 - 0)
SCBI	508	Cell and Developmental Biology	3 (2 - 3)
SCBI	602	Cell and Developmental Genetics	3 (3 - 0)

1.3.2.4 Aquatic Science and Malacology

SCBI	504	Introduction to Malacology	3 (2 - 3)
SCBI	514	Field Methods in Malacology	2 (0 - 6)
SCBI	516	Comparative Anatomy of Mollusks	3 (2 - 3)
SCBI	550	Biology of Crustaceans	3 (2 - 3)

1.3.2.5 Entomology

SCBI	501	Molecular Entomology	3 (3 - 0)
SCBI	502	Medical Entomology	3 (2 - 3)

			Credits (lecture-lab)
SCBI	506	Insect Taxonomy	3 (2 - 3)
SCBI	509	Biology of Insects	3 (3 - 0)
SCBI	528	Principles of Plant Resistance to Insects	2 (2 - 0)
SCBI	560	Economic Entomology	3 (3 - 0)
SCBI	562	Insect Ecology	3 (2 - 3)

1.3.2.6 Parasitology

SCBI	503	Medical Parasitology	3 (2 - 3)
SCBI	572	Molecular Parasitology	3 (2 - 3)
SCBI	573	Immunobiology	3 (2 - 3)
SCBI	578	Techniques in Cell and Tissue Culture	3 (1 - 6)

1.3.2.6 Environmental Science and Toxicology

SCBI	518	Environmental Aquatic Toxicology	3 (2 - 3)
SCBI	521	Biology of Polluted Waters	3 (2 - 3)
SCBI	522	Air Pollution	3 (2 - 3)
SCBI	524	Environmental Biology and Management	3 (2 - 3)
SCBI	619	Environmental Science	3 (2 - 3)

1.3.2.7 Common Elective Courses

SCBI	579	Research Techniques in Biological Sciences	2 (1 - 3)
SCBI	581	Special Problems in Biology	2 (0 - 6)
SCBI	582	Current Topics in Biology	2 (2 - 0)
GRID	603	Biostatistics	3 (3 - 0)
SCID	507	Microscopic Technique	1 (0 - 2)
SCID	508	Biomolecular and Spectroscopic Techniques	1 (0 – 2)
SCID	509	Separation Techniques	1 (0 – 2)
SCID	510	Immunological Methods	1 (0 – 2)
SCID	511	Gene Technology	1 (0 – 2)
SCID	512	Receptor Binding and Enzyme Kinetic Assays	1 (0 – 2)
SCID	513	Animal Cell Culture Techniques	1 (0 – 2)
SCID	514	Animal Experimentation in Biomedical Research	1 (0 – 2)

Apart from the above courses, the students may take other elective courses that are relevant to their needs, under the approval of the Doctoral Programme committee.

1.3.3 Dissertation

			Credits (lecture-lab)
SCBI	699	Dissertation	36/48 (0-108/144)

1.3.4 Research projects emphasize on the following areas

Genetics and Evolution

- Population Genetics of Economically Important Insects
- Population Genetics of Black Flies in Thailand
- Cytogenetics and Population Biology Study on Fruit Fly's Parasitoids

Ecology and Conservation Biology

- Plant-Animal Interaction : Roles of Birds in Seed Dispersal
- Conservation Biology of Some Endangered Species e.g. Wild Cattles and Elephants
- Biology and Ecology of Birds

Molecular and Developmental Biology

- Molecular Cloning of Antigen Encoding Genes from *Opisthorchis viverrini* (Liver Fluke) and Primary Analysis Encoded Proteins
- Molecular Detection and Biological Control of Densovirus and Wolbachia
- Molecular Study of Crustacean Germ Cell

Aquatic Science and Malacology

- Reproduction of the Freshwater Prawns
- Reproduction of Seahorses
- Culture of Abalone, *Haliotis asinina*
- Morphology and Histology of Gastropods and Bivalves

Entomology

- Diversity of Meso-and Micro-Artropods in Various Agricultural Areas.
- Ecological and Behavioral Ineractions among Insects, Microorganisms and Plants

Parasitology

- Characterization *Fasciola gigantica* for Development of Vaccine and Improved Immunodiagnosis

Environmental Science and Toxiology

- Bioremediation of Arsenic Polluted Environment
- Crude Oil Degradation by Microorganism

- Biosorption of Heavy Metals by Bacterial Biomass
- Phytoaccumulation and Phytotoxicity of Heavy Metals in Aquatic Plants

1.4 Course Code Explanation

Two first letters represent the abbreviated name of Faculty

GR = Faculty of Graduate Studies

SC = Faculty of Science

The third and fourth letters represent the abbreviated name of responsible units.

ID = Multidisciplinary

BI = Department of Biology

The first number (5XX and 6XX) represents postgraduate programme level.

1.5 Study Plan

1.5.1 For a student holding a Bacheler's Degree

Year	Semester 1	Semester 2
	Summer GRID 612 Cell and Molecular Biology 3(3-0) **Total 3 Cr**	
1	SCID 504 Evolutionary and Environmental Biology 3 (3 - 0) SCBI 601 Seminar 1 (1 - 0) Elective courses 5 **Total 9 Cr**	SCID 506 Biostatistics and Research Methodology 3 (2 - 2) SCBI 601 Seminar 1 (1 - 0) Elective courses 5 Cr **Total 9 Cr**
2	SCBI 601 Seminar 1 (1-0) Elective courses 5 Cr **Total 6 Cr**	SCBI 601 Seminar 1 (1 - 0) **Comprehensive Exam.** **Qualifying Exam.** **Total 1 Cr**
3	SCBI 699 Dissertation 12 (0-48) **Total 12 Cr**	SCBI 699 Dissertation 12 (0-48) **Total 12 Cr**
4	SCBI 699 Dissertation 12 (0-48) **Total 12 Cr**	SCBI 699 Dissertation 12 (0-48) **Total 12 Cr**

1.5.2 For a student holding a Master's degree

Year	Semester 1		Semester 2	
1	SCBI 601 Seminar	1 (1-0)	SCBI 601 Seminar	1 (1-0)
	Elective courses	8 Cr	Elective courses	2 Cr
	Total	**9 Cr**	**Comprehensive Exam.**	
			Qualifying Exam.	
			Total	**3 Cr**
2	SCBI 699 Dissertation	9 (0–36)	SCBI 699 Dissertation	9 (0–36)
	Total	**9 Cr**	**Total**	**9 Cr**
3	SCBI 699 Dissertation	9 (0–36)	SCBI 699 Dissertation	9 (0–36)
	Total	**9 Cr**	**Total**	**9 Cr**