Bioscience for Sustainable Agriculture Program

Graduate Student Handbook

Faculty of Animal Sciences and Agricultural Technology

Silpakorn University

Phetchaburi IT campus (PITC) Cha-am, Phetchaburi, Thailand.

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SILPAKORN UNIVERSITY

Silpakorn University is presently under the supervision of the Office of the Higher Education Commission, the Ministry of Education and was originally established as the School of Fine Arts under the Fine Arts Department in 1933. Primarily, the school has offered the only studying programs in Painting and Sculpture by waiving tuition fees for the government officers and the students. Its inception and development owed much to an almost lifetime devotion of Professor Silpa Bhirasri, an Italian sculptor (previously called Professor Corrado Feroci) who was commissioned during the reign of King Rama VI to work in the Fine Arts Department. He subsequently enlarged the classes to include greater members of the interested public before taking his initiative in setting up the School of Fine Arts. The School gradually developed and was officially accorded a new status and named, Silpakorn University, on 12 October 1943. In the early phase of its development, its inaugural faculty was the Faculty of Painting and Sculpture (presently is named the Faculty of Painting Sculpture and Graphic Arts). Since 1955, the Faculty of Thai Architecture was established (later changed the name into the Faculty of Architecture) and two more faculties were consecutively established to accommodate the university's growing academic interests, namely, the Faculty of Archaeology and the Faculty of Decorative Arts in the following years.

In 1966, Silpakorn University had an educational policy to diversify the main areas of the four faculties into sub-specializations to respond to the development of its more academic interests and activities. However, the university underwent a limited physical expansion in Wang Tha Phra Campus. Hence, a new campus, Sam Chandra Palace Campus, was later established in Nakorn Pathom Province in the former residential compound of King Rama VI. The first two faculties founded on this campus were the Faculty of Arts and the Faculty of Education in 1968 and 1969, respectively. Later, three more faculties were set up, namely, the Faculty of Science in 1972, and the Faculty of Pharmacy in 1985, and the Faculty of Engineering and Industrial Technology in 1991 (originally was named the Faculty of Industrial Technology). In 1999, the Faculty of Music was established completed and

becomes more academic excellence and specialization in artistic fields. Silpakorn University also extends the educational capacity through establishing a new campus in Phetchaburi Province for promoting the higher education in the western Provinces of Thailand since 1997 and the new campus was named "Phetchaburi Information Technology Campus". In 2001 and 2002, the Faculty of Animal Sciences and Agricultural Technology and the Faculty of Management Science were established consecutively in Phetchaburi Campus. In 2003, the Faculty of Information and Communication Technology (ICT) was established as well as Silpakorn University International College (SUIC) was established at the same period for providing the international curriculum in different academic fields. In addition, Silpakorn University also maintains a Graduate School established since 1972 to facilitate and responsible for all offering graduate programs at Silpakorn University.

PHILOSOPHY	"Arts and Sciences create the sustainable nation."
RESOLUTION	"To create arts, knowledge and wisdom for the society."
VISION	"Silpakorn University is a Leading Creative University"

CORE VALUE

T = Transparency

E = Excellence

A = Amicability

M = Moral Courage

CORE COMPETENCY

S = Scientific Thinking

I = Integrity

L = Love of Wisdom

P = Public Mind

A = Art Appreciation

K = Knowledgeable

O = Outcomes Oriented Person

R = Responsible Man

N = Need for Achievement

GRADUATE SCHOOL

The Graduate School was established in 1972 to facilitate the University's expanding post-graduate studies. It was meant to serve as a central administrative unit and to coordinate graduate study programs. In carrying out this task, the Graduate School has also assumed a vital role in formulating policies, controlling academic standards and quality, promoting graduate research, and providing administrative as well as academic supports for departments in both developing and launching their graduate study programs. Presently, the Graduate School is offering the various graduate programs in doctoral degree level and master degree level, both in regular programs and special programs. In some programs, the courses are offered in weekends apart from the daily working hours for enhancing more learning opportunities for the groups of working people.

Contact

Sanamchandra Palaces Campus
7th floor, 50th year Building, 6 Rajamankha Nai Road, Amphoe Muang Nakhon Pathom Province 73000, THAILAND
Tel. +66 3 421 8788-91 Fax. +66 3 424 3435

Talingchan campus
2nd floor Office of President. 22 Borommarachachonnani Rd. Talingchan District,
Bangkok 10170, THAILAND Tel. +66 2 849 7502 - 3 Fax. +66 2 849 7503

Wang Tha Phra Campus
31 Na Prha Lan Road, Phra Nakorn District Bangkok 10200, THAILAND Tel./Fax: +66 2 222 7129

Phechaburi Information Technology Campus
1 Moo 3 Samphraya District Amphoe Cha-am Phetchaburi Province 76120

Website: http://www.graduate.su.ac.th

FACULTY OF
ANIMAL SCIENCES AND AGRICULTURAL TECHNOLOGY (ASAT)

Vision : A leading faculty in agriculture (Top 5 of the nation)

Mission

1. Develop the graduates who are knowledgeable and capable in agricultural skills with the virture and acknowledgement
2. Research for base of knowledge in agricultural science
3. Transfer the knowledge from research study to community for the development of agriculture
4. Inherit art, culture and local wisdom

Core Competence

To transfer technology in agriculture for the development of career and knowledge reliability for community and society

Core Value

A= Accountability

S = Social Responsibility

A= Adaptability

T = Think Positively

MASTER OF SCIENCE PROGRAM IN BIOSCIENCE FOR SUSTAINABLE AGRICULTURE (INTERNATIONAL PROGRAM)

Philosophy

To create personnel in agriculture with the capability to use scientific process, in combination with local wisdom and with the emphasis in the conservation of nature and environment, for the sustainability in agriculture

Degree Title

Master of Science (Bioscience for Sustainable Agriculture)

M.Sc. (Bioscience for Sustainable Agriculture)

Total of graduate credits

Plan 1 36 credits

Plan 2 not less than 36 credits

Program format Master of Science, 2-year program

Language English

Admission Thai and foreign students

Educational systems Classroom

The program is administered solely by the Silpakorn University

Program Committee

Name	Academic Position	Euducation Background	Remark
Miss Chaowanee Laosutthipong	Assistant Professor	Ph.D. (Biotechnology) Mahidol University, Thailand (2012 M.Sc. (Immunology) Mahidol University, Thailand (2006) B.Sc. (Biology) Second class honor, Silpakorn University (2001)	Head of program
Miss Pantipa Na Chiangmai	Associate Professor	Ph.D. (Crop Production Technology) Suranaree University of Technology (2004) M.Sc. (Agriculture) Chiang Mai University (1999) B.Sc. (Agriculture) Chiang Mai University (1997)	

Name	Academic Position	Euducation Background	Remark
Miss Panida Duangkaew	Assistant Professor	Ph.D. (Biochemistry) Mahidol University, Thailand (2012) B.Sc. (Biology) First class honor, Mahidol University (2006)	
Mr. Mana Kanjanamaneesatian	Associate Professor	M.Appl.Sc. (Microbiology) Second Class Honor, Lincoln University, New Zealand (1994) M.Sc. (Plant Pathology) Kasetsart University (1988) B.Sc. (Plant Pathology) Kasetsart University (1985)	
Mr. Narin Preyavichyapugdee	Assistant Professor	Ph.D. (Pathobiology) Mahidol University, Thailand (2007) D.V.M. Kasetsart University (1995)	

Program status program permission/approval

New program for 2015. Instruction begins in the second semester of Academic Year 2015. The University Academic Committee granted program approval at Meeting Number 4/2557 Date 1 Month May Year 2014. The University Council granted program permission at Meeting Number 11/2558. Date 11 Month November Year 2015.

Educational Management System

Bi-semester instructional system. All regulations are in accordance with Silpakorn University's Regulations on Graduate Study B.E. 2561 (2018). Summer courses are available based on the Program Committee's judgment.

Instruction Period

Semester 1	July – November
Semester 2	December – April
Summer	April – July

Student qualifications

Plan 1 (Thesis)

Graduates of Bachelor degree in science or related fields with an equivalent or with the decision and consent of the curricular academic committee

Plan 2 (Thesis and course works)

Graduates of Bachelor degree in science or related fields with an equivalent GPA not less than 2.50

Eligible candidates must have all the qualifications specified in Clause 7 of Silpakorn University's Regulation on Graduate Study B.E. 2550 (2007).

The eligible candidate for this curriculum must pass the English test as stipulated by Silpakorn University Regulation 2007 or other similar standards. The result of the test should not exceed 2 years prior to the admission to study. The curricular academic committee shall consider temporarily waiving the English test on the case by case basis.

Transfer of credits, courses and cross university registration In accordance with Silpakorn University's Regulation on Graduate Study B.E. 2561 (2018) .

Curriculum

With no less than the enrollment of 4 consecutive academic semesters

Number of credits	total	36 credits
Plan 1		36 credits
Plan 2	not less than	36 credits

Curriculum Structure

Plan 1 (Thesis Only)		**36 credits**
Thesis (equivalent)		36 credits
Seminar		2 credits*
Required course		7 credits *
Plan 2 (Thesis + Course works)	**not less than**	**36 credits**
Required courses		15 credits
Elective courses not less than		9 credits
Seminar		2 credits
Thesis (equivalent)		12 credits

*As non-credit subjects.

Note: All students enrolled in both plans are required to pass the comprehensive examination.

Curriculum Courses

Plan A1

Seminar (non-credit) **2 credits**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 505	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
715 506	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)

Required course (non-credit) **7 credit**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 503	Research Methodology for Agricultural Sustainability	3* (3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1*(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3* (2-3-4)

Thesis (equivalent to) **36 credits**

715 591	Thesis	(equivalent to)	36 credits

Plan A2

Required courses **15 credits**

715 501	Cell Science and Molecular Biology	3(3-0-6)
715 502	Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 503	Research Methodology for Agricultural Sustainability	3(3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1(1-0-2)
715 505	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
715 506	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3(2-3-4)

Note: * means non-credit subjects.

Elective courses not less than 9 credits

The elective courses can be chosen from the following list or from the post-graduate courses provided by the faculty with the decision and content of the curricular academic committee.

1. Animal Production

715 521	Organic Livestock Production for Sustainability	3(3-0-6)
715 522	Animal Genetic Improvement and Conservation	3(3-0-6)
715 523	Animal Farming Management Technology	3(3-0-6)
715 524	Hygiene in Dairy Production	3(3-0-6)
715 525	Animal Pathobiology	3(3-0-6)
715 526	Diagnosis of Aquatic Animal Diseases	3(2-3-4)

2. Plant Production

715 527	Genetic Improvement for Crop Production	3(3-0-6)
715 528	Plant Genetic Resource and Application	3(3-0-6)
715 529	Seed Technology	3(2-3-4)
715 530	Plant Pathology	3(2-3-4)
715 531	Postharvest Physiology and Technology	3(2-3-4)
715 532	Integrated Pest Management	3(2-3-4)

3. Multidisciplinary

715 533	Principle of King Rama IX Wisdom for Agricultural Sustainability	3(3-0-6)
715 534	Natural Resources and Environmental Management	3(3-0-6)
715 535	Ecology and Management of Aquatic Resources	3(3-0-6)
715 536	Soil Fertility and Protection for Sustainable Agriculture	3(2-3-4)
715 537	Microbial Diversity and Agricultural Application	3(2-3-4)
715 538	Food Safety Standard and International Policy	3(3-0-6)
715 539	Agribusiness and Entrepreneurship	3(3-0-6)
715 540	Modern Technology for Smart Farming Agriculture	3(3-0-6)
715 541	Molecular Biology Techniques and Bioinformatics	3(3-0-6)
715 542	Research in Agricultural Areas	3(3-0-6)
715 543	Enzyme Technology	3(3-0-6)
715 544	Selected Topics in Bioscience for Sustainable Agriculture	3(3-0-6)

Thesis (equivalent to) 12 credits

715 592	Thesis	(equivalent to)	12 credits

Program Learning Outcomes (PLOs)

No.	PLOs	Cognitive Domain (Knowledge) (Bloom's Taxonomy (Revised)						Psychomotor Domain (Skills)	Affective Domain (Attitude)
		R	U	Ap	An	E	C	S	At
PLO1	Explain the principles of science and biology related to agricultural research and practices		✓						
PLO2	Explain the concepts of bioscience application to promote agricultural sustainability		✓						
PLO3	Demonstrate the important of natural resources and environmental sustainability			✓					✓
PLO4	Apply the appropriate statistical analysis for solving the specific agricultural research problems			✓					
PLO5	Demonstrate the responsibility to oneself and society based on ethical principles			✓					✓
PLO6	Utilize the English language skills for scientific communication in reading and writing the research articles, seminar, and thesis			✓					
PLO7	Utilize computer programs and information technology to search the agricultural and scientific information and create the presentation media			✓					

No.	PLOs	Cognitive Domain (Knowledge) (Bloom's Taxonomy (Revised)						Psychomotor Domain (Skills)	Affective Domain (Attitude)
		R	U	Ap	An	E	C	S	At
PLO8	Compile and logically discuss the agricultural research information				✓				
PLO9	Able to communicate with the community or farmers by focusing on analysis of critical ideas to apply in research projects				✓				
PLO10	Propose and conduct an integrated research project for solving agricultural problems by using appropriate bioscience knowledge and research methodology for sustainable agriculture.						✓		

Study Plan

Plan A1 (Thesis only option)

Year 1 Semester 1

Course code	Course title	Credit (L-P-S)
715 503	Research Methodology for Agricultural Sustainability	3*(3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1*(1-0-2)
715 505	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
Total credits		**0**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 506	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)
715 591	Thesis (equivalent to)	12
Total credits		**12**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 591	Thesis (equivalent to)	12
Total credits		**12**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 591	Thesis (equivalent to)	12
Total credits		**12**

Note: * means non-credit subjects.

Plan A2 (Thesis and coursework option)

Year 1 Semester 1

Course code	Course title	Credit (L-P-S)
715 501	Cell Science and Molecular Biology	3(3-0-6)
715 502	Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 503	Research Methodology for Agricultural Sustainability	3(3-0-6)
715 504	Selected Skills for Research in Bioscience for Sustainable Agriculture	1(1-0-2)
715 505	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
Total credits		**11**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 506	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)
715 507	Integrative Research in Bioscience for Sustainable Agriculture	3(2-3-4)
	Elective courses	6
Total credits		**10**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 592	Thesis (equivalent to)	6
	Elective courses	3
Total credits		**9**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 592	Thesis (equivalent to)	6
Total credits		**6**

Course Description

715 501 Cell Science and Molecular Biology 3(3-0-6)

Cell structure and function, structure of genetic materials, DNA replication, cell cycle, cell division, gene expression, gene regulation, cell differentiation, mutation, cell-cell communication, energy flow in biological system, techniques in molecular biology.

715 502 Bioscience for Agricultural and Environmental Sustainability 3(3-0-6)

Integration of bioscience with King Rama IX wisdom, sufficiency economy philosophy, and local wisdom in sustainable farming models, good agricultural practices, organic farming, green production, smart farming, zero waste agricultural practices, integrated agricultural farming system, agricultural product processing and marketing, relationship and impact of farming on the natural resources and environment, and knowledge transferring techniques.

715 503 Research Methodology for Agricultural Sustainability 3(3-0-6)

Research and research questions for agricultural sustainability, errors in research, research designs, research methods, research tools, population and sampling, statistical analysis techniques, and research presentation.

715 504 Selected Skills for Research in Bioscience for Sustainable Agriculture 1(1-0-2)

Criteria: Assessment will be given as S or U.

The virtues of researchers, research ethics in human and animals, intellectual property rights, self-safety and environmental safety in conducting research such as biological safety, chemical safety, radiation and electricity safety, techniques for reading and writing scientific works, including research projects, thesis, research articles and review articles for publication.

715 505 Seminar in Bioscience for Sustainable Agriculture I 1(1-0-2)

Criteria: Assessment will be given as S or U.

Reading on recent agricultural bioscience research literature, improving ability on critical thinking process, discussion and presentation of research work under advisory of seminar instructors.

715 506 Seminar in Bioscience for Sustainable Agriculture II 1(1-0-2)

Pre-requisite: 715 504 Seminar in Bioscience for Sustainable Agriculture I

Criteria: Assessment will be given as S or U.

Compiling the information of scientific research, discussion and presentation of research in bioscience for sustainable agriculture.

715 507 Integrative Research in Bioscience for Sustainable Agriculture 3(2-3-4)

Analysis of the situation and agriculture problems from the farmers, agricultural operation agencies or agricultural entrepreneurs, concepts and impacts of integrative research to agriculture, environment, and health, presenting research

guidelines for solving agricultural problems by applying the knowledge of bioscience or with other academic fields appropriately.

715 521 Organic Livestock Production for Sustainability 3(3-0-6)

Principle of organic livestock, animal welfare, productivity in organic livestock production, food security and sustainability in organic livestock, Thai and International laws, regulations, and product certification systems of organic livestock.

715 522 Animal Genetic Improvement and Conservation 3(3-0-6)

Biodiversity, animal genetic resources, domestic animal diversity, loss of genetic diversity in domestic animals, reasons and criteria for breed selection and conservation, methods for conservation of animal genetic diversity, status of breeds, concepts and principles in genetic improvement of livestock.

715 523 Animal Farming Management Technology 3(3-0-6)

Modern technology in animal housing, hygiene and sanitary control, farm waste and environmental management, resource management system, public relations and marketing quality control, evaluation system including product accreditation underlying animal welfare.

715 524 Hygiene in Dairy Production 3(3-0-6)

Factors affecting milk quality, milking parlor design and management, milking systems and analysis, milking machine, mastitis and milk quality management, waste management from dairy farms.

715 525 Animal Pathobiology 3(3-0-6)

Principles of pathology and pathogenesis, inflammation and wound healing, cellular adaptation after injury, genetic abnormalities and hemodynamic disorders, metabolic disorders of carbohydrates, proteins, lipids, minerals and colorants, abnormal cell growth and cancer.

715 526 Diagnosis of Aquatic Animal Diseases 3(2-3-4)

Aquatic animal diseases caused by parasitic, bacteria, fungal and viral, diagnosis of aquatic animal diseases, prevention and treatment of aquatic animal diseases, experimental methodology in aquatic animal diseases.

715 527 Genetic Improvement for Crop Production 3(3-0-6)

Genetic theory, conventional breeding and gene manipulation methods for genetic improvement in plants, utilization of genetic resources for qualitative and quantitative improvement, socio-economic aspect in adopting genetically modified crops.

715 528 Plant Genetic Resource and Application 3(3-0-6)

Genetic diversity of plant in the agro-ecosystem in Thailand, methods in determining genetic diversity of plants, preservation of plant genetic diversity in agro-ecosystem, identification of indigenous plant species with potential for conservation and commercial utilization.

715 529 Seed Technology 3(2-3-4)

Seed morphology and physiology of seeds under storage and germination, process of seed production, methods in determining seed quality, seed pathology and insect pests of seeds, techniques used in seed storage.

715 530 Plant Pathology 3(2-3-4)

Definition of plant diseases, history of plant disease outbreak of important economic crop, types of microorganisms causing diseases in plant, mechanisms of plant defense, important diseases of economic plants, principles of plant disease management and tactics for plant disease control, biotechnology in plant pathology, appropriate technology for controlling plant diseases in sustainable crop production.

715 531 Postharvest Physiology and Technology 3(2-3-4)

Causes of loss in post-harvest products, physiology of maturity, ripening, and senescence, genetic control of maturity and senescence, post- harvest loss, prevention of post-harvest loss, insect pests and diseases of post-harvest products.

715 532 Integrated Pest Management 3(2-3-4)

Definition of pests, key historical events in pest outbreak, effect of pest outbreak to agriculture, pest control tactics, biological control of insect pests, integrated pest management (IPM) concept, components and steps of IPM, sampling techniques and decision tools for IPM, examples of IPM in current practices.

715 533 Principle of King Rama IX Wisdom for Agricultural Sustainability 3(3-0-6)

Principles of King Rama IX wisdom relating to agricultural development, production system and farm resources management follow the footsteps of sufficiency economy, agricultural land management in accordance with royal works, principles of "new theory" in agriculture and rural development, transfer of agricultural innovation theory of preventing soil degradation and erosion by vetiver grass, and the theory of teasing the ground due to the royal initiative.

715 534 Natural Resources and Environmental Management 3(3-0-6)

Approaches in natural resource management, stakeholder analysis for natural resource management, Geographic Information Systems (GIS), auditing systems for natural resource management, biodiversity, and environmental conservation.

715 535 Ecology and Management of Aquatic Resources 3(3-0-6)

Ecology of aquatic ecosystems, methods for aquatic ecology study, water resource, examination and solving of water resource problems, and management of aquatic resources.

715 536 Soil Fertility and Protection for Sustainable Agriculture 3(2-3-4)

Nutrient recycling in soil, soil fertility analysis, plant-soil-microbe interaction, methods of enhancing soil fertility for crop production, and soil protection method and application for sustainable agriculture.

715 537 Microbial Diversity and Agricultural Application 3(2-3-4)

Habitat of microbes, host-microbe association, isolation and identification of microbes, detection and utilization of potential microbes for agricultural application, product formulation, and commercialization of beneficial microbe.

715 538 Food Safety Standard and International Policy 3(3-0-6)

Physical, chemical and biological hazards in food processing and production, standard and good manufacturing practices in food safety, hazard analysis and critical control point, maximum residue limiting value related to food safety, and international food safety policy.

715 539 Agribusiness and Entrepreneurship 3(3-0-6)

Concepts of agribusiness management, principles of agribusiness organization management, principles of marketing, principles of business initiation analysis and preparation of business plan.

715 540 Modern Technology for Smart Farming Agriculture 3(3-0-6)

Principle of smart farming, electronic and information technologies for smart farming, application of GIS and meteorology in weather forecast for smart farming system, digital image processing, and smart sensing system for site-specific farming management.

715 541 Molecular Biology Techniques and Bioinformatics 3(3-0-6)

DNA and RNA extraction, Polymerase Chain Reaction, gel electrophoresis, cloning, sequencing, molecular hybridization, DNA microarray, immunofluorescence staining technique, bioinformatics database utilization, nucleic acid analysis and sequence alignment, bioinformatics for gene cloning and expression, phylogenetic

analysis, protein bioinformatics database, analysis of protein structure and function, prediction of post- translational modification of proteins and protein modeling, proteomics, metabolomics and transcriptomics.

715 542 Research in Agricultural Areas 3(3-0-6)

The concept and importance of research in agricultural areas, communication and working with farmers, application of theoretical knowledge and practice in agricultural areas.

715 543 Enzyme Technology 3(3-0-6)

Introduction to enzymes, mechanisms of enzyme catalysis, enzyme structure specificity and stability, natural and recombinant enzyme production and purification, industrial enzymes, methods in improvement of enzyme activity using genetic engineering, and application of enzymes in agricultural approaches.

715 544 Selected Topics in Bioscience for Sustainable agriculture 3(3-0-6)

Topics of current interest in Bioscience for Sustainable agriculture.

715 591 Thesis (equivalent to) 36 credits

Original research dissertation related to bioscience for sustainable agriculture under the guidance of advisory committee.

715 592 Thesis (equivalent to) 12 credits

Original research dissertation related to bioscience for sustainable agriculture under the guidance of advisory committee.

Thesis requirement

This curriculum requires the students to use the holistic approach to identify research question and to work on thesis topic based upon the problems of the community development.

Standard learning outcomes

The students possess the understanding of systematic research planning with the capability to integrate basic and applied knowledge and write the research report which can be disseminated at the national conferences.

Instruction period

Plan 1	Semesters 2: Year 1 - Semesters 2 Year 2
	Semesters 1 and 2: Year 2 students
Plan 2	Semesters 1 and 2: Year 2 students

Number of credits

Plan 1	Thesis equivalents to 36 credits
Plan 2	Thesis equivalents to 12 credits

Preparation

(1) Students (in all study plans) must be individually tasked with a research project. This will start with the seminar courses in which the students are required to undertake independent study and present the seminar in the class. During the course of engaging in seminar, the students will be in a position to identify their interest in any particular research area and this will be subsequently developed into a thesis proposal.

(2) Approval of thesis proposal by Thesis Examination Committee for graduate study.

(3) Assignment of the primary thesis advisor of individual student. This proposal must later be approved in accordance with the standard criteria for graduate study B.E. 2561 (2018).

Assessment

The program's evaluation must be in accordance with Silpakorn University's Regulations on Graduate Study B.E. 2561 (2018) as in 26.4 and section 6 in the following topics:

1) Approval of thesis proposal and project, Thesis registration, Conduct of research under the guidance of a primary thesis advisor and a co-advisor (if any)
2) Student submission of progress report to the primary thesis advisor and a co-advisor (if any) every semester, Evaluation report on student's thesis progress at the end of every semester, and Submission to and request for evaluation from the Thesis Examination Committee.Evaluation result will be reported as IP (in progress) or NP (no progress).

3) There must be at least 3 but not more than 5 members of Thesis Examination Committee, which shall consist of the head of the department or a person authorized by the head of the department (which shall not be the primary advisor of the thesis being examined), the primary advisor and not more than 3 qualified persons (at least one of which must be an external examiner). The Thesis evaluation results will be reported as 4 levels including "Excellent", "Good", "Passed", and "Failed".

Grading regulations or criteria

Assessment and Graduation are consistent with Silpakorn University's Regulations on Graduate Study B.E. 2561 (2018).

Student's achievement standard review process

The review processes of student's achievement standard in all courses are as follows:

Review of student's learning outcome before graduation

(1) Re-evaluate at the course level, in which the students should evaluate the teaching in the courses they have taken. The appointed committee will conduct review the suitability of the examination papers basing upon the teaching plan.

(2) Re-evaluate at the curricular level under the internal quality assurance of the university after which the result should have been reported.

Review of student's learning outcome after graduation

The emphasis is on continuous research of student career achievement and use research results to improve on instructional process and integrated curriculum as well as to evaluate curriculum quality. Components to be reviewed are:

(1) Evaluation of employment rate of each class of graduates in terms of graduate's job search period, knowledge, ability, and career confidence.

(2) Interview or questionnaire survey of graduate employer's opinions and satisfaction at different intervals, for example, after one or three years of employment.

(3) Evaluation by other educational institutes thought interview or questionnaire survey on the level of satisfaction on graduate's knowledge, readiness and other qualifications.

(4) Evaluation by graduates with employment in terms of the readiness and knowledge gained from Bioscience in Sustainable Agriculture and other course provided in the

program, including the relevancy of these courses to graduate' s employment. Opinions on how to improve the curriculum are invited.

(5) Concrete and measurable student's achievement such as number of patents granted, number of social and professional awards of recognition.

(6) Assess the view from the external experts or invited lecturers with respect to the student's learning capacity or other related traits.

(7) The number of research presented at the conferences or the number of the publication in the national and international journals.

Graduation criteria

In accordance with the Silpakorn University regulation regarding Postgraduate study 2018 section 7 and/or the revision of this regulation.

Comply with the conditions and rules of the curriculum as follows:

Passed (Obtain "S") the comprehensive examination

Thesis or part of the thesis conducted has been accepted for publication in the international peer-reviewed journal/transaction at least 1 paper or present thesis/part of the thesis in the international conferences with full-paper published in the conference proceeding at least 1 paper.

The students must attend the national or international conference in the field related to agriculture at least one time. The students need to interact with at least one speaker and the 2-3 conference participants to develop communication skill in English. The synopsis of this interaction must be included in the thesis as an appendix.

DOCTOR OF PHILOSOPHY PROGRAM IN BIOSCIENCE FOR SUSTAINABLE AGRICULTURE (INTERNATIONAL PROGRAM)

Philosophy

To create personnel in agriculture with the capability to use scientific process, in combination with local wisdom and with the emphasis in the conservation of nature and environment, for the sustainability in agriculture.

Degree title

Doctor of Philosophy (Bioscience for Sustainable Agriculture)

Ph.D. (Bioscience for Sustainable Agriculture)

Total of graduate credits

Plan 1.1		48	credits
Plan 1.2		72	credits
Plan 2.1	not less than	48	credits
Plan 2.2	not less than	72	credits

Program format

Doctor of Philosophy Program

Plan 1.1: 3-year program

Plan 1.2: 5-year program

Plan 2.1: 3-year program

Plan 2.2: 5-year program

Language English

Admission Thai and foreign students

Educational systems Classroom

The program is administered solely by Silpakorn University.

Program Committee

Name	Academic Position	Euducation Background	Remark
Miss Chaowanee Laosutthipong	Assistant Professor	Ph.D. (Biotechnology) Mahidol University, Thailand (2012 M.Sc. (Immunology) Mahidol University, Thailand (2006) B.Sc. (Biology) Second class honor, Silpakorn University (2001)	Head of program
Miss Pantipa Na Chiangmai	Associate Professor	Ph.D. (Crop Production Technology) Suranaree University of Technology (2004) M.Sc. (Agriculture) Chiang Mai University (1999) B.Sc. (Agriculture) Chiang Mai University (1997)	
Miss Panida Duangkaew	Assistant Professor	Ph.D. (Biochemistry) Mahidol University, Thailand (2012) B.Sc. (Biology) First class honor, Mahidol University (2006)	
Mr. Mana Kanjanamaneesatian	Associate Professor	M.Appl.Sc. (Microbiology) Second Class Honor, Lincoln University, New Zealand (1994) M.Sc. (Plant Pathology) Kasetsart University (1988) B.Sc. (Plant Pathology) Kasetsart University (1985)	
Mr. Narin Preyavichyapugdee	Assistant Professor	Ph.D. (Pathobiology) Mahidol University, Thailand (2007) D.V.M. Kasetsart University (1995)	

Program status program permission/approval

New program for 2015. Instruction begins in the second semester of Academic Year 2015. The University Academic Committee granted program approval at Meeting Number 4/2557 Date 1 Month May Year 2014. The University Council granted program permission at Meeting Number 11/2558. Date 11 Month November Year 2015.

Educational Management System

Bi-semester instructional system. All regulations are in accordance with Silpakorn University's Regulations on Graduate Study B.E.2550 (2007). Summer courses are available based on the Program Committee's judgment.

Instruction Period

Semester 1	July – November
Semester 2	December – April
Summer	April – June

Student qualifications

Student qualifications according to study plan

Plan 1.1 Graduates of Master Degree or equivalent in agricultural science, biological science, or related fields with excellent academic record or with the decision and consent of the curricular academic committee

Plan 1.2 Graduates of Bachelor Degree in agricultural science, biological science, or related fields with excellent academic record and consent of the curricular academic committee

Plan 2.1 Graduates of Master Degree in agricultural science, biological science, or related fields with an equivalent GPA of 3.00 or higher or with the decision and consent of the curricular academic committee

Plan2.2 Graduates of Bachelor Degree in agricultural science, biological science, or related fields with excellent academic record and consent of the curricular academic committee

Eligible candidates must have all the qualifications specified in Clause 7 of Silpakorn University's Regulation on Graduate Study B.E. 2550 (2007) (and/or its revised version).

The eligible candidate for this curriculum must pass the English test as stipulated by Silpakorn University Regulation 2007 or other similar standards. The result of the test should not exceed 2 years prior to the admission to study. The curricular academic committee shall consider temporarily waiving the English test on the case by case basis.

Candidates who do not meet the qualification must have their cases considered by the program committee and the Dean of Graduate School.

Transfer of credits, courses and cross university registration (If any): In accordance with Silpakorn University's Regulation on Graduate Study B.E. 2561 (2018)**.**

Curriculum

Number of credits

Plan 1.1		48	credits
Plan 1.2		72	credits
Plan 2.1	not less than	48	credits
Plan 2.2	not less than	72	credits

Curriculum Structure

Plan 1.1	**48**	**credits**
Seminar (non-credit)	2	credits
Required course (non-credit)	6	credits
Thesis (equivalent to)	48	credits
Plan 1.2	**72**	**credits**
Seminar (non-credit)	2	credits
Required course (non-credit)	7	credits
Thesis (equivalent to)	72	credits
Plan 2.1	**48**	**credits**
Seminar (non-credit)	2	credits
Required courses (non-credit)	3	credits
Required courses	9	credits
Elective courses not less than	3	credits
Thesis (equivalent to)	36	credits
Plan 2.2	**72**	**credits**
Seminar	2	credits
Required courses	13	credits
Elective courses not less than	9	credits
Thesis (equivalent to)	48	credits

Note: All students enrolled in every study plans are required to pass (gain “S”) the qualifying examination (QE).

Curriculum Courses

Plan 1.1

Seminar (non-credit) **2 credits**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)

Required course (non-credit) **6 credits**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 603	Agricultural Research Design and Methodology	3*(3-0-6)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)

Thesis (equivalent to) **48 credits**

715 691	Thesis (equivalent to)	48 credits

Note: * means non-credit subjects.

Plan1.2

Seminar (non-credit) **2 credits**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)

Required course (non-credit) **7 credits**

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 603	Agricultural Research Design and Methodology	3*(3-0-6)
715 604	Essential Research Skills in Bioscience for Sustainable Agriculture	1*(1-0-2)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)

Thesis (equivalent to) **72 credits**

715 692	Thesis (equivalent to)	72 credits

Plan 2.1

Seminar (non-credit) 2 credits

(Course in which no credit will be given as part of the curriculum and its assessment will be given as S or U)

715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)

Required Courses (non-credit) 3 credits

715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)

Required Courses 9 credits

715 601	Advanced Cell and Molecular Biotechnology	3(3-0-6)
715 602	Advanced Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 603	Agricultural Research Design and Methodology	3(3-0-6)

Note: * means non-credit subjects.

Elective courses not less than 3 credits

The elective courses can be chosen from the following list or can be chosen from the post-graduate courses provided by the Faculty of Animal Sciences and Agriculture Technology with the decision and content of the curricular academic committee.

715 621	Population Genetics for Agricultural Research	3(3-0-6)
715 622	Molecular Biotechnology in Aquaculture	3(3-0-6)
715 623	Selected Topics in Bioscience for Sustainable Agriculture	3(3-0-6)

Thesis (equivalent to) 36 credits

715 693	Thesis (equivalent to)	36 credits

Plan2.2

Seminar 2 credits

715 605	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)

Required Courses 13 credits

715 601	Advanced Cell and Molecular Biotechnology	3(3-0-6)
715 602	Advanced Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 603	Agricultural Research Design and Methodology	3(3-0-6)

715 604 Essential Research Skills in Bioscience for Sustainable Agriculture 1(1-0-2)

715 607 Innovative Research in Bioscience for Sustainable Agriculture 3(2-3-4)

Elective courses not less than 9 credits

The elective courses can be chosen from the following list or can be chosen from the post-graduate courses provided by the Faculty of Animal Sciences and Agriculture Technology with the decision and content of the curricular academic committee.

715 621 Population Genetics for Agricultural Research 3(3-0-6)

715 622 Molecular Biotechnology in Aquaculture 3(3-0-6)

715 623 Selected Topics in Bioscience for Sustainable Agriculture 3(3-0-6)

Thesis (equivalent to) 48 credits

715 694 Thesis (equivalent to) 48 credits

Program Learning Outcomes (PLOs)

No.	PLOs	Cognitive Domain (Knowledge) (Bloom's Taxonomy (Revised)						Psychomotor Domain (Skills)	Affective Domain (Attitude)
		R	U	Ap	An	E	C	S	At
PLO1	Apply the principles of cell and molecular biotechnology to a specific agricultural research and practice			✓					
PLO2	Apply the concepts of sustainability and bioscience to promote agricultural and environmental sustainability			✓					
PLO3	Choose the appropriate research design and statistical analysis for solving the specific agricultural research problems			✓					
PLO4	Demonstrate the responsibility to oneself and society based on ethical principles			✓					✓
PLO5	Utilize the English language at an excellent level of listening, reading, writing, and speaking in scientific communications			✓					

No.	PLOs	Cognitive Domain (Knowledge) (Bloom's Taxonomy (Revised)						Psychomotor Domain (Skills)	Affective Domain (Attitude)
		R	U	Ap	An	E	C	S	At
PLO6	Interpret the relevant data using the computer programs and information technology				✓				
PLO7	Logically criticize the agricultural research information					✓			
PLO8	Evaluate the critical information from communication with various sectors to apply in research projects					✓			
PLO9	Propose and conduct a novel integrated research project using appropriate bioscience knowledge and research methodology to promote sustainable agriculture						✓		
PLO10	Formulate a novel knowledge, products, or methods to transfer to the communities for promoting sustainable agriculture						✓		

Note: Specify the symbol ✓ in each level of the "Cognitive Domain" or "Psychomotor Domain" and "Affective Domain" channels as appropriate.

Study Plan

Plan 1.1 **Year 1 Semester 1**

Course code	Course title	Credit (L-P-S)
715 603	Agricultural Research Design and Methodology	3*(3-0-6)
715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
Total credits		**0**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)
Total credits		**0**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 691	Thesis (equivalent to)	12
Total credits		**12**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 691	Thesis (equivalent to)	12
Total credits		**12**

Year 3 Semester 1

Course code	Course title	Credit (L-P-S)
715 691	Thesis (equivalent to)	12
Total credits		**12**

Note: * means non-credit subjects.

Year 3 Semester 2

Course code	Course title	Credit (L-P-S)
715 691	Thesis (equivalent to)	12
Total credits		**12**

Plan 1.2

Year 1 Semester 1

Course code	Course title	Credit (L-P-S)
715 603	Agricultural Research Design and Methodology	3*(3-0-6)
715 604	Essential Research Skills in Bioscience for Sustainable Agriculture	1*(1-0-2)
715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
Total credits		**0**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)
Total credits		**0**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Note: * means non-credit subjects.

Year 3 Semester 1

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 3 Semester 2

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 4 Semester 1

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 4 Semester 2

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 5 Semester 1

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Year 5 Semester 2

Course code	Course title	Credit (L-P-S)
715 692	Thesis (equivalent to)	9
Total credits		**9**

Plan 2.1

Year 1 Semester 1

Course code	Course title	Credit (L-P-S)
715 601	Advanced Cell and Molecular Biotechnology	3(3-0-6)
715 602	Advanced Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 603	Agricultural Research Design and Methodology	3(3-0-6)
715 605	Seminar in Bioscience for Sustainable Agriculture I	1*(1-0-2)
Total credits		**9**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1*(1-0-2)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3*(2-3-4)
	Elective courses	3
Total credits		**3**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 693	Thesis (equivalent to)	9
Total credits		**9**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 693	Thesis (equivalent to)	9
Total credits		**9**

Note: * means non-credit subjects.

Year 3 Semester 1

Course code	Course title	Credit (L-P-S)
715 693	Thesis (equivalent to)	9
Total credits		**9**

Year 3 Semester 2

Course code	Course title	Credit (L-P-S)
715 693	Thesis (equivalent to)	9
Total credits		**9**

Plan 2.2

Year 1 Semester 1

Course code	Course title	Credit (L-P-S)
715 601	Advanced Cell and Molecular Biotechnology	3(3-0-6)
715 602	Advanced Bioscience for Agricultural and Environmental Sustainability	3(3-0-6)
715 603	Agricultural Research Design and Methodology	3(3-0-6)
715 604	Essential Research Skills in Bioscience for Sustainable Agriculture	1(1-0-2)
715 605	Seminar in Bioscience for Sustainable Agriculture I	1(1-0-2)
Total credits		**11**

Year 1 Semester 2

Course code	Course title	Credit (L-P-S)
715 606	Seminar in Bioscience for Sustainable Agriculture II	1(1-0-2)
715 607	Innovative Research in Bioscience for Sustainable Agriculture	3(2-3-4)
	Elective courses	3
Total credits		**7**

Year 2 Semester 1

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
	Elective courses	6
Total credits		**12**

Year 2 Semester 2

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 3 Semester 1

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 3 Semester 2

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 4 Semester 1

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 4 Semester 2

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 5 Semester 1

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Year 5 Semester 2

Course code	Course title	Credit (L-P-S)
715 694	Thesis (equivalent to)	6
Total credits		**6**

Course Description		Credits
715 601	**Advanced Cell and Molecular Biotechnology**	**3(3-0-6)**

Novel discoveries and research approaches on cell and molecular biology, high throughput genome sequencing technologies, transcriptional and post-transcriptional regulation of gene expression, gene interaction at the network and systems biology level, post- genomic projects and biological databases, research article interpretation in the field of cell and molecular biology, and current cell and molecular biotechnology research in agricultural application.

715 602	**Advanced Bioscience for Agricultural and Environmental Sustainability**	**3(3-0-6)**

Application of the integrated bioscience with King Rama IX wisdom, sufficiency economy philosophy, and local wisdom for promote sustainable agriculture using concepts of good agricultural practices, organic farming, green production, smart farming, zero waste agricultural practices, integrated agricultural farming system, agricultural product processing and marketing, relationship and impact of farming on the natural resources and environment.

715 603	**Agricultural Research Design and Methodology**	**3(3-0-6)**

Concept and operation of agricultural research, skills in the utilization of different research methods, key principles of research project design, intellectual and methodological debates on research design, ethics in agricultural research practice, techniques in sampling, surveying, interviewing, case study analysis, focus groups, interviewing, analyzing, and presenting data.

715 604	**Essential Research Skills in Bioscience for Sustainable Agriculture**	**1(1-0-2)**

* Assessment will be given as S or U.

Application of research ethics and virtues, intellectual property rights, self-safety and environmental safety in agricultural research conduction, responsibilities to society and the

environment, lifelong learning skills, problem-solving skills, and English skills for the international scientific communications.

715 605 Seminar in Bioscience for Sustainable Agriculture I 1(1-0-2)

* Assessment will be given as S or U.

Searching, compiling the information, discussion on modern research in bioscience for sustainable agriculture, competency of analytical thinking, and presentation of research in bioscience for sustainable agriculture under supervision of seminar instructors.

715 606 Seminar in Bioscience for Sustainable Agriculture II 1(1-0-2)

Pre-requisite: 715 605 Seminar in Bioscience for Sustainable Agriculture I

* Assessment will be given as S or U.

Discuss the concept or principal of bioscience in agriculture from case study of research project or articles, interpretation of scientific data from agricultural research, competency of analytical thinking, critizism, presentation of modern research in bioscience for sustainable agriculture or topic related to student's thesis, and discussion for application of local wisdom to research work.

715 607 Innovative Research in Bioscience for Sustainable Agriculture 3(2-3-4)

Criteria : Assessment will be given as S or U.

Innovation concept, innovation to create sustainability, important technologies for research and creativity for current and future agriculture, application of technology for creation or extension of agricultural innovation.

715 621 Population Genetics for Agricultural Research 3(3-0-6)

Mendel's concept, Hardy-Weinberg principle, allele frequency, evolutionary processes, adaptation and speciation, statistical analysis for population genetics study, application of Mendel's theory for studying population genetics (in both animals and plants) under Hardy-Weinberg equilibrium.

715 622 Molecular Biotechnology in Aquaculture 3(3-0-6)

Genetic variation at the molecular level in aquatic animals, genomic tools and genome mapping, gene expression and functional analysis, cloning and DNA sequencing techniques, gene transfer and transgenic aquatic organisms, commercial application of genetic biotechnology in aquaculture.

715 623 Selected Topics in Bioscience for Sustainable Agriculture 3(3-0-6)

Criteria: With the consent of the curricular academic committee.

Topics of current interest in Bioscience for Sustainable agriculture.

715 691 Thesis (equivalent to 48 credits)

Criteria : For student enrolled in plan 1.1

Implementation of research project under the supervision of advisory committee, thesis defense and publishing the manuscript in peered review journal.

715 692 Thesis (equivalent to) 72 credits

Criteria : For student enrolled in plan 1.2

Implementation of research project under the supervision of advisory committee, thesis defense and publishing the manuscript in peered review journal.

715 693 Thesis (equivalent to) 36 credits

Criteria : For student enrolled in plan 2.1

Implementation of research project under the supervision of advisory committee, thesis defense and publishing the manuscript in peered review journal.

715 694 Thesis (equivalent to) 48 credits

Criteria : For student enrolled in plan 2.2

Implementation of research project under the supervision of advisory committee, thesis defense and publishing the manuscript in peered review journal.

Thesis requirement

This curriculum requires the students to use the holistic approach to identify research question and to work on thesis topic based upon the problems of the community development.

Standard learning outcomes

The students possess the understanding of systematic research planning with the capability to integrate basic and applied knowledge and write the research report which can be disseminated at the national conferences.

Instruction period

Plan 1.1 Year 2 Semester 1 – Year 3 Semester 2

Plan 1.2 Year 2 Semester 1 – Year 5 Semester 2

Plan 2.1 Year 2 Semester 1 – Year 3 Semester 2

Plan 2.2 Year 2 Semester 1 – Year 5 Semester 2

Number of credits

Plan 1.1 Thesis (equivalent to) 48 credits

Plan 1.2 Thesis (equivalent to) 72 credits

Plan 2.1 Thesis (equivalent to) 36 credits

Plan 2.2 Thesis (equivalent to) 48 credits

Preparation

(1) Students (in all study plans) must be individually tasked with a research project. This will start with the seminar courses in which the students are required to undertake independent study and present the seminar in the class. During the course of engaging in seminar, the students will be in a position to identify their interest in any particular research area and this will be subsequently developed into a thesis proposal.

(2) Approval of thesis proposal by Thesis Examination Committee for graduate study.

(3) Assignment of the primary thesis advisor of individual student.

This proposal must later be approved in accordance with the Silpakorn University' s Regulations on Graduate Study B.E. 2561 (2018) and / or subsequent changes.

Assessment

Thesis evaluation must be in accordance with Silpakorn University' s Regulations on Graduate Study B.E. 2561 (2018) and / or subsequent changes) in the following topics:

1) Approval of thesis proposal and project, Thesis registration, Conduct of research under the guidance of a primary thesis advisor and a co-advisor (if any)

2) Student submission of progress report to the primary thesis advisor and a co-advisor (if any) every semester. Evaluation on student's thesis progress must be performed at the end of every semester. Evaluation result will be reported as IP (in progress) or NP (no progress).

3) There must be at least 5 members of Thesis Examination Committee, which consist of the external expert examiner, thesis advisors, and curriculum committee. Note that the external expert examiner shell be a chairman of the examination committee. The Thesis evaluation results will be reported as 4 levels including "Excellent", "Good", "Passed", and "Failed".

Grading regulations or criteria

Assessment and evaluation of education are consistent with Silpakorn University's Regulations on Graduate Study B.E. 2561 (2018).

Student's achievement standard review process

The review processes of student's achievement standard in all courses are as follows:

Review of student's learning outcome before graduation

(1) Re-evaluate at the course level, in which the students should evaluate the teaching in the courses they have taken. The appointed committee will conduct review the suitability of the examination papers basing upon the teaching plan.

(2) Re-evaluate at the curricular level under the internal quality assurance of the university after which the result should have been reported.

Review of student's learning outcome after graduation

The emphasis is on continuous research of student career achievement and use research results to improve on instructional process and integrated curriculum as well as to evaluate curriculum quality. Components to be reviewed are:

(1) Evaluation of employment rate of each class of graduates in terms of graduate's job search period, knowledge, ability, and career confidence.

(2) Interview or questionnaire survey of graduate employer's opinions and satisfaction at different intervals, for example, after one or three years of employment.

(3) Evaluation by other educational institutes thought interview or questionnaire survey on the level of satisfaction on graduate's knowledge, readiness and other qualifications.

(4) Evaluation by graduates with employment in terms of the readiness and knowledge gained from Bioscience in Sustainable Agriculture and other course provided in the program, including the relevancy of these courses to graduate' s employment. Opinions on how to improve the curriculum are invited.

(5) Concrete and measurable student' s achievement such as number of patents granted, number of social and professional awards of recognition.

(6) Assess the view from the external experts or invited lecturers with respect to the student's learning capacity or other related traits.

(7) The number of research presented at the conferences or the number of the publication in the national and international journals.

Graduation criteria

Plan 1.1 and Plan 1.2

Pass (Obtain "S") the qualifying examination to be an eligible candidate for a thesis proposal examination, present the thesis, and pass the final oral thesis defence examination by the committee appointed by that institution which must consist of experts from inside and outside the institution and must be an open system for interested parties to listen.

The thesis work or part of the thesis must be published or at least be accepted to publish in the qualified national or international journals as announced by the Higher Education Commission on the criteria for the consideration of academic journals for the dissemination of academic works at least 2 papers.

Plan 2.1 and Plan 2.2

Complete the courses as specified by the program, which must have an average score of not less than 3.00 from the 4 levels score system or equivalent. Pass (Obtain "S") the qualifying examination to be an eligible candidate for a thesis proposal examination, present the thesis, and pass the final oral thesis defence examination by the committee appointed by that institution which must consist of experts from inside and outside the institution and must be an open system for interested parties to listen.

The thesis work or part of the thesis must be published or at least be accepted to publish in the qualified national or international journals as announced by the Higher Education Commission on the criteria for the consideration of academic journals for the dissemination of academic works.

Others

In accordance with the Silpakorn University's Regulations on Graduate Study B.E. 2561 (2018). and / or subsequent changes and the announcement of the Ministry of Education on the criteria for graduate curriculum standards B.E. 2558 and / or subsequent changes.

ACADEMIC POLICIES, PROCEDURES, AND TIMELINES

This part of the handbook provides graduate students with the rules, procedures, and deadlines which they must meet while study in this program. Academic Calendar for each academic year is provided on http://reg4.su.ac.th/registrar/calendar.asp

Enrollment

Student Registration

All new students must register as graduate student of the Graduate School, Silpakorn University by on- line registration or walk- in registration on time. Students may consult the program/ faculty staffs for assistance in this process. New student will get their own student ID number when the registration is completed.

Student Orientation

All new students must attend the orientation held by the program and by the graduate school. All students will be advised for registration, academic rules, procedures, timeline for the study, and student life in Silpakorn University.

Course Registration

A graduate student must maintain his/her enrollment each semester by registering for course/thesis/dissertation credits and paying the tuition and fee. All graduate students **MUST** enroll every semester until their degree has been awarded.

The period of registration for each semester will be announced in advance on the website http://reg4.su.ac.th/registrar/calendar.asp Regularly,

1st semester (July – November) : 1st half of July

2nd semester (December – April) : 1st half of December

Registration must be performed by on-line registration via http://reg.su.ac.th

Preparation of on-line registration:

1. Student should consult with their academic adviser/ program director about the course to be registered for approval prior to on-line registration submission. Note:

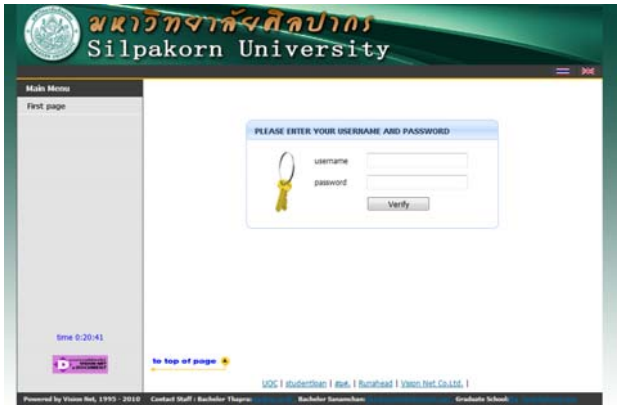
All students enrolled in plan 2 (Thesis and course works) must receive grade not less than "B" in every subjects.

2. If you have a debt of tuition fee from previous semester, you cannot register.
3. Registration/add-drop of the subjects has to be done during the registration period in which appeared in the academic calendar.
4. Late registration/ add- drop of the subjects must be approved by academic adviser/ program director and will be charged for 50 baht per day but not more than 1000 baht.
5. Student can register for Thesis or Independent study only after they pass the proposal examination and their Thesis/ Independent study title was approved by the Graduate School.
6. Student must register for Thesis/ Independent study in EVERY SEMESTER until their degree has been awarded. (Payment will be charged only in the first time of registration)

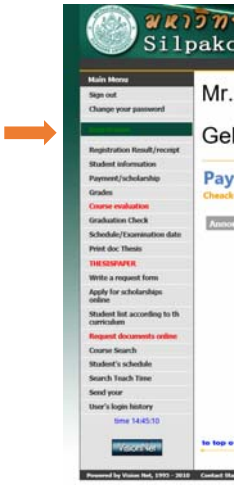
On-line Course Registration Steps

1. Go to website: http://reg.su.ac.th

2. Select menu “Sign in” and type in your student ID and password.



3. Select menu “ลงทะเบียน” or “Registration” and select the subjects to be enrolled. If you want to delete the course, press the "[ลบ]" or “DELETE” behind each course.



4. Late registration/ Add/ drop button will appear on the menu bar only during Late registration or Add/drop period.
5. Select “Back” on the menu bar and select “ผลการลงทะเบียน”. Click on “PDF” to print the invoice.
6. Payment should be done on time at the bank. Late payment can be done at the faculty of Graduate School office.

Add/Drop Period

Around one and a half months after the beginning of each semester or the first week period of the summer session is considered the Add/Drop Period (academic calendar can be found on the

website http://reg4.su.ac.th/registrar/calendar.asp). Add/Drop is also accomplished by using the on-line registration.

Course Exceptions/Non departmental courses:

Permission must be obtained from the academic department/instructor to register for such courses. A student must seek permission and submit the required departmental approval form to the faculty office prior to the end of the Add/Drop period.

Repeating Courses

Students may repeat or re-grade a course when they are not satisfied with the result. The latest grade will be used to calculate the Cumulative GPA.

1. For master degree, students who receive grade below B or U in the required courses or grade C or U in the elective course must repeat course for get grade more than B.

2. For doctorate degree, student who receive grade below B or U in the required and the courses, must repeat course for get grade more than B.

3. The student who receive grade above B, is not allowed to repeat course in the subject of required course.

4. The student who receive grade below B, is allowed to repeat course in the subject of elective course (or change the other elective subject).

Transferring academic credits

Students who wish to transfer credits to Bioscience for sustainable agriculture program must receive the approval from advisor/ program director and graduate committee of the faculty. The following criteria must be met in order to transfer credits for courses taken:

- The course, taught in English from an international program, must have been taken within the past 5 years.
- The submission of an official transcript and course syllabus is required.
- The course must show a grade of no less than a B or its equivalent.
- The course will be eligible for transfer credits if its content matches three-fourths or more of the content of the equivalent Bioscience for sustainable agriculture program course.
- The conditions of transferring credits are under the Regulations of Silpakorn University for graduate student.

ProbationThe classification will start at the end of the student' s second semester of the first academic year. Classification will occur at the end of every semester until graduation. Graduate student are automatically classified under the following:

1. Regular normal status student

2. Student on probation:

1. Receive U in any subject
2. Receive NP in Thesis progress report
3. Students with a GPA below 3.00 in first semester
4. Students with a Cumulative GPA of 3.00 from second semester

** Student sudden retire when probation continually 2 semesters

Leave of Absence

Students can take a leave of absence in any semester and follow the rule below.

1. Student must be study in Bioscience course at least 1 semester.
2. Student must send the request form to Graduate school within 30 days since the first date of semester.
3. Student can request to leave, they have the reason below,

3.1 Military selection

3.2 Health leave: When a student's physical health or mental health precludes successful completion of his/her academic course work, the student may receive a health leave of absence or withdrawal from the University, upon recommendation by the appropriate physician.

3.3 Force majeure or other necessary event

4. Student send the request form to Program director course and process to graduate school.
5. If graduate school permit, student must register and pay for leave fees.
6. Student must pay for maintaining student status in every semester.
7. Period of leave must be count in study program **except 3.1**
8. Student leave after course registration, will receive "W" in every subject in that semester

9. In case 3.3, student can leave in continually 2 semesters in each leave, but all leaves do not more than 4 semesters.

10. Once the students would like to return, in order to continue their studies, they have to request re-admission by sending request form to graduate school 2 weeks before registration start.

Retirement

Student must retire in case as list below:

1. Students with a GPA below 2.50 in first semester
2. Students with probation continually 2 semesters
3. Master degree students cannot pass the second comprehensive examination
4. Doctorate degree students cannot pass the second qualified examination
5. Master degree students with unapproved thesis topic within 3 years
6. Doctorate degree students with unapproved thesis topic within 3 years (from master degree) or 5 years (from bachelor degree)
7. Student who is unable to graduate within study plan
8. Student with punish for retire
9. Student who is not follow the regulation of leave and re-admission
10. Student who is not register or maintain student status in regular semester
11. Thesis failed
12. Retirement approval from graduate school
13. Lacking of student property
14. Death

**Student with retirement in 10, 11, and 13 may allow return, in order to continue their studies within 2 years after retirement date under consideration of graduate school.

Punishment

1. For those students who have violated the rules and regulations, Silpakorn University Graduate Committee will discipline them based on the seriousness.

1.1 Probation

1.2 Academic leave

1.3 Dismissal

2. In case of examination violate, Silpakorn University Graduate Committee will discipline them by following:

2.1 If student dishonest or cheat in any type of examination, they must fail in all subjects in that semester and dismissal.

2.2 If student do something that implied intent to dishonest or cheat in any type of examination, they will discipline the punishment from Silpakorn University Graduate Committee.

Resignation

Students who need to resignation, they must send the request form to Graduate School before examination week in each semester. During the resignation determination period, student still be the normal student status and must follow the rules and regulations of Silpakorn University.

Foreign language examination

1. Students of every Master and Doctorate degree program in Silpakorn University must pass at least one language in the foreign language examination.

2. International student must pass the foreign language examination, which is other language by follow the Graduate rules.

3. Student may not test the foreign language examination in the following case:

3.1 Students pass the foreign language examination from Silpakorn University Graduate school.

3.2 Students study and pass the foreign language examination from Graduate school extracurricular activity training.

3.3 Students study and pass the foreign language examination within the curriculum course in non-credit status and receive grade “S”.

3.4 Students study and pass the foreign language examination within the curriculum course in credit status and receive at least grade “B”.

3.5 Students pass the foreign language examination from other institute in Thailand or foreign countries that Silpakorn University Graduate school certification.

Table: Score of English test follow the regulation of Silpakorn University Graduate school

Standard Test	Score
TOEFL (iBT)	72-94
TOEFL (ITP)	543-626
IELTS	5.5-6.5
TOEIC	785-940
CUTEP	70-98
Cambridge English	180-199
STEP Test (Silpakorn English Proficiency Test)	B2

Qualified and comprehensive examination

Qualified examination (Q.E.) is the academic test for doctorate degree program follow Silpakorn University Graduate School. This test checks the ability and quality of knowledge for Ph.D. study and thesis.

1. Type 1 doctorate degree student must pass Q.E. before thesis.
2. Type 2 doctorate degree student must pass Q.E. after finish required courses.

Comprehensive examination: Students that studied and passed all subjects in academic program can test Comprehensive examination.

All students enrolled in plan 1 and plan 2 in Bioscience master degree are required to pass the Comprehensive examination.

Grading System

- Grades with points:

Grade/Achievement	
A	Excellent
B+	Very Good
B	Good
C+	Fairly Good
C	Fair
D+	Poor
D	Very Poor
F	Fail

- Grades alone

S Satisfactory

U Unsatisfactory

I Incomplete

W Withdrawal

AU Audit

X Not Reported

Evaluation of qualified/comprehensive examination is recorded as following:

S Satisfactory

U Unsatisfactory

Evaluation of a student's Thesis or Independent study in each semester is recorded as following:

IP In Progress

NP Not progress

Evaluation of a completed student's Thesis or Independent study is recorded as following:

Excellent (ดีมาก)

Good (ดี)

Passed (ผ่าน)

Failed (ตก)

Note:

For Ph.D student

Plan 1 Student must receive "S" or "Au" in every course

Plan 2 Student must receive not less than "B" in every course

Pass the English test according to the regulation of Silpakorn University Graduate School

Pass the qualified examination (received "S")

Pass the Thesis defense examination with Excellent (ดีมาก), Good (ดี) or Passed (ผ่าน)

For Master degree student

Grade of the required course must not less than "B". Otherwise, re-grade is required.

Grade of the elective course must not less than "C". Re-grade can be the same course or different course available in the program.

Pass the English test according to the regulation of Silpakorn University Graduate School

Pass the qualified examination (received "S")

Pass the Thesis defense examination with Excellent (ดีมาก), Good (ดี) or Passed (ผ่าน)

THESIS AND INDEPENDENT STUDY PROCESS

Student prepares his/her Thesis proposal under the guidance of advisor(s). Once ready,

- For i-Thesis system, go to the menu iThesis in your Silpakorn web portal and follow the steps as guided on the website.
- For registration system in REG website, follow the step below:

1. •Program director proposes the Thesis Title Consideration committee to Graduate School.
   •The official documents have to be sent to the Graduate school at least 1 month prior to Thesis Title Consideration examination date.
2. •**Student request for Thesis Title Consideration Examination** and propose the Thesis committee via on-line reg. system, print the document and hand-in the official request document to the Program director/ staff.
   •The official documents have to be sent to the Graduate school at least 1 month prior to Thesis Title Consideration examination date
3. •**Thesis Title Consideration Examination (Proposal examination)**
4. •Correction of must be done according to the suggestion of Thesis Title Consideration committee.
5. •Once finish, **student must fill-in the on-line request for Approval of Thesis Title and Authorization of Thesis Adviser/Co-Adviser** via the reg system.
   •Hand-in the completed filled-in official request to the program director/ staff.
6. •Program director proposes the official document for Approval of Thesis Title and Authorization of Thesis Adviser/Co-Adviser for approval from the Graduate School.
7. •Once approved, student must **enroll for the Thesis** at that semester (Note that enrollment must be done with in the registration period) and in every semester until graduation but the payment will be charged only for the first enrollment.
   •**Note**: Student who wishes to request for Approval of Thesis Title and Authorization of Thesis Adviser/Co-Adviser must enroll in the program at least 2 semesters and have credit earned not less than 12 credits. Approval of Thesis Title and Authorization of Thesis Adviser/Co-Adviser must be done within 3 academic years after the first registration.

8
- Once the students finish his/her Thesis works under the guidance of advisor(s) and get the permission to take the Thesis defense examination. Follow the steps below:
- Note that they must also pass all courses, comprehensive/qualified examination and English test.

9
- **Student must filled-in the request form for Thesis Defense Committee** via on-line reg system.
- Hand-in the completed filled-in request form to the staff or program director to propose to the Graduate School 15 days prior to the examination date.

10
- Graduate School authorizes the Thesis Defense Committee and send out the invitation for external committee according to student request.

11
- **Thesis defense examination**

12
- Correction of must be done according to the suggestion of Thesis Defense Committee.

13
- Once the correction is completed, **student must hand-in their thesis to the Graduate School** for Thesis format checking.

14
- **Student correct the Thesis format** according to the suggestion of Graduate School

15
- **Hand-in the completed Thesis and all required documents to the Graduate School**. Once you submitted the Thesis, the graduate School will not allow the re-sent or re-correction.

Timeline for Bioscience program study:

Master degree:

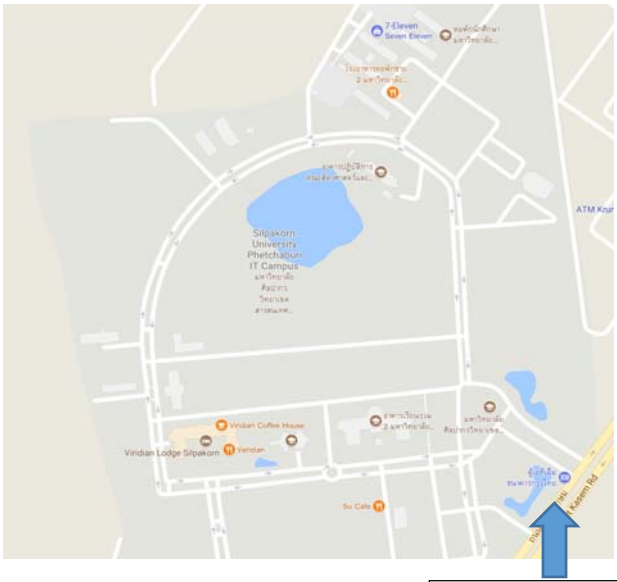
Topic	Year 1/1	Year 1/2	Summer	Year 2/1	Year 2/2
Registration	Aug.	Jan.	-	Aug.	Jan.
Course work study (plan2)	←	→		←	→
Thesis: **1. Advisor and thesis topic selection (send the progress report to Bioscience committee program)**	Dec.-Jan.	May-Jun.			
2. Thesis committee appointment and proposal examination			Jul.		
3. Thesis registration				Aug	
4. Progress report to Graduate school (Every semester until defense thesis)				Dec.	
5. Presentation/publication				→	→
6. Defense examination (After passed Comprehensive examination)					Jan.-May
Foreign language examination (Passed before Comprehensive examination)	→	→	→	→	
Comprehensive examination				Dec.-Jan.	

Doctorate degree:

Topic	Year 1/1	Year 1/2	Year 2/1	Year 2/2	Year 3/1	Year 3/2
Registration	Aug.	Jan.	Aug.	Jan.	Aug.	Jan.
Course work study **1. Plan 1.1 and 2.1** **2. Plan 1.2 and 2.2**	→	→	→			
Thesis: **1. Advisor and thesis topic selection (send the progress report to Bioscience committee program)**	→	→	May-Jun. Dec.-Jan.	→	→	→
2. Thesis committee appointment and proposal examination					Jul.	
3. Thesis registration					Aug.	
4. Progress report to Graduate school					Dec	
5. Presentation/publication						Jan.-May
6. Defense examination **(After passed Qualified examination)**						→
Foreign language examination **(Passed before Qualified examination)**	→	→	→	→		
Qualified examination					Dec.-Jan.	

ABOUT CAMPUS

Map of SU-PITC



Building of Animal Sciences and Agricultural Technology (ASAT) Faculty

- ASAT Faculty's Building is on the right hand side of the main road, near Dormitory 2 and cafeteria. ASAT Building is used as the lecture room, staffs and students' offices, and laboratory.

Academic Building I

- Academic building I is located next to Administration building
- Academic building is the location of various university agencies; include
  1. Faculty of Management Science (2nd- 3rd floor).
  2. Viridian Lodge & Restaurant (Viridian Lodge on 4th floor; Viridian Restaurant on 1st floor).
  3. Graduate Service Center (2nd floor).

Academic Building II

- Academic building II is located on main road beside Administration building and opposite the Central canteen.

- Academic building II is mainly used as the place for studied activities and it is also the location of post office (1st floor)

- Post office is located at the 1st floor of this building

Administration Building

- Administration building is located on main road between Academic building I and Academic building II
- It is the major office of the campus where you can deal with the university's staffs.
- Administration building is the location of all 3 faculties main offices (1st – 3rd floor) and campus office (1st floor).

Main office of ASAT is located on the 4th floor of Administration building. Once you would like to get the further information about ASAT, you are able to contact our staffs in this office.

Instructional Resources Center (Witthayaborikarn Building)

Instructional Resources Center is located on the main road. It is near Academic building I and Dormitory I. Central Library is on the 1st floor of Instructional Resources Center. Computer center is also on the 1st floor of Instructional Resources Center. It is opposite the Central Library.

Food Centers

- There are 2 Food centers in the university. The 1st one is surrounded by the students' dormitories. It's opposite ASAT building ,you can walk from ASAT.

The 2nd Food center is opposite Academic building II. This one is used as the main cafeteria for the students and staffs.

Health Care Service

- The Health Care Service Center is located on the 1st floor of Dormitory 5. The Health Care Services opens from 8.30 a.m. to 9.00 p.m. daily. You may call 032-594115 to make an appointment.

Free tram service

- Tram parking or the starting point of tram service is located at Gate 2 (the gate behind the students' dormitories).
- There are the stops around the campus where you can wait and get on the free tram.
- The free tram service starts from 8.00 a.m. to 8.30 p.m. daily.

Gymnasium

- Gymnasium is opposite the students' dormitories and it is not too far from ASAT building.

Symbolic places and parks

- Ganesha is one of the famous Hindu gods. He is believed as the symbolic god of Silpakorn university.

- When you get into the university (from the main gate), you will meet the enormous Ganesha statue on the circle.

Public Transportation (Bus / Van service)

Behind of the university (Gate 2), there are the van and mini-bus stops for the one who wants to travel to Bangkok or the nearby places.

Here are the lists of the van and mini-bus service agencies:

"Ha-Nu-Man 1" (วินหนุมาน 1)

Destination:

- Bangkok Southern Bus (Khon-Song-Sai-Tai-Mai)
- Pin Klao (Bangkok)

Time: from 5 a.m.to 7 p.m.

Tel. : 081-8585-390 , 081-8585-380

"Chang-Kui Buri-Prachaup" (วินช้างกุยบุรี ประจวบคีรีขันธ์)

Destination:

- Mo-Chit 2 (Bangkok) (หมอชิต 2)
- Pha-Ram-2 (Bangkok) (พระราม 2)

Time from 5 a.m.to 7 p.m.

Tel. 098-2738-504 , 089-9185-684

"Joa-Ra-Kay-Pran" (วินจระเข้ปราณ)

Destination :

- Bangkok Southern Bus (Khon-Song-Sai-Tai-Mai)
- Pin Klao (Bangkok)

Time: from 5 a.m.to 7 p.m.

Tel. : 081 8585390 / 081 8585 380

****Destination** : Silpakorn University, Sanam Chandra Palace Campus in Nakhon Prathom

1. You can catch any buses/vans from the university to Big C Phetchaburi (aound 100 Baht). Then catch another van/bus to Nakhon Prathom province.
2. Ask for the bus/van from the university to Nakhon Prathom directly.

INTRODUCTION TO THAI CULTURE

Thailand has its unique culture and tradition that is quite different from the western countries. The foreigners who come to the country should learn the common dos and don'ts. This will help them stay happily with Thai society.

Location : Thailand located in South East Asia**.** It is bordered to the north by Myanmar and Laos, to the east by Laos and Cambodia, to the south by the Gulf of Thailand and Malaysia, and to the west by the Andaman Sea and the southern part of Myanmar**.**

Climate : Thailand can be described as tropical and humid throughout the year. It normally has 3 main seasons – summer (March – May), rainy (June- October) and mildly winter (November-February). During the hottest time of the year (March-April), the temperature usually reaches up to 40C.

Language : Thai is national and official language. English is widely understood in a particular group of young people, especially in Bangkok and other big cities. However, it is better to speak English clearly and slowly to them.

Religion: Around 90% of Thai people is Buddhist that makes Buddhism is the national religion. About 5% believes in Islam, especially the population in the southern part of the country. And some parts of them believe in Christianity and others.

Food : Thai food is a harmonious blend of spicy, sweet and sour. This makes many dishes of Thai food popular around the world. The best well-known dishes are Tom Yam Goong, Phad Thai and Som Tam. Thai people prefer eating strong-flavored food so you can find a lot of hot and spicy food over the country. Most Thai food is usually made up of various ingredients – meat, vegetable and herb/spices.

Clothes: The weather in Thailand is mostly hot and humid. Generally, Thais often wear shirt, polo, pants or any clothes that keep them cool and comfortable. It is always important for the people to dress comfortably while still being culturally appropriate. Furthermore, when you visit the temples or other official places, you should dress more appropriate such as long pants, skirts below the knee, long sleeves and no sandals.

Dos

1. Do dress properly
2. Do be friendly and smile
3. Do keep your body clean. Thai people usually shower twice a day.
4. Do remove your shoes before entering a temple and even some places
5. Do respect the Royal Family and the Buddhist monks
6. Say “Sa-wad-dee-krub” if you are a man and “sa-wad-dee- ka” if you are a woman when greeting. We do not shake hand , we “wai”.
7. Do speak slowly and clearly

Don’ts

1. Do not touch a Thai person’s head or ruffle their hair
2. Do not be overly affectionate in public
3. Do not touch a Thai woman’s body
4. Do not place your feet up
5. Do not get involve with drugs
6. Do not point at people or things with feet

Common Thai Words and Phrases

Thai is a tonal language that composes of 5 tones : low, falling, high, rising and monotone. The different tone of a word show different meaning in the content. When Thai people speak out, they often end the sentences with “ka” if you are a women) and “krub” (if you are a man) in order to make them sound polite.

Male : Sa wad dee krub. (Good morning)

Female : Sa wad dee ka. (Good morning)

Here are the common Thai words you should know

Thai	English	Thai	English
Common expression			
sa wad dee	Hello	chai	Yes.
sa bai dee mai?	How are you?	mai chai	No.
sa bai dee	Yes, I'm fine.	dai	Yes, you can.
mai sa bai	I'm not good.	mai dai	No, you can't.
khob khun	Thank you.	mai pen rai	never mind / no problem
khob khun mak	Thank you very much.	kao jai mai?	Do you understand?
laew chur gan	See you later.	kao jai	I understand.
khun + name	Mr/ Miss/ Mrs.	mai kao jai	I don't understand.
ther / khun	you	a rai ?	What?
chan	I (female)	.....dai mai?	can I .....?
pom	I (male)	chuay duay	help me
Places and traveling			
khun pai nai ma?	Where have you been?	liao khwa	turn right
tee nai?	Where?	liao sai	turn left
khun cha pai nai?	Where are you going?	trong pai	keep straight ahead
chan/pom cha pai....	I'm going to	rong a harn	canteen
hong rean	classroom	prai sa nee	post office
hong nam	toilet	ta na karn	bank
hong sa mud	library	ran ka	shop
rong pa ya ban	hospital	tuek/ a karn	building
hoa pak	dormitory	rod rang	tram
tang yak	junction	wong wien	circle
prai sa nee yoo tee nai?	Where is the post office?	klai	far

Shopping			
tao rai?	How much?	kai	sell
kee baht	How much?	sue	buy
chan/pom tong gan sue nam.	I would like to buy some drink.	long dai mai?	May I try this?
Ber aria?	What size it is?	see daeng	red
see khiaw	Green	see khao	white
see fa	light blue	ranka	shop
see luang	yellow	paeng mak	too expensive
see nam ngern	blue	ngern torn	change
see dum	black	lot raka dai mai?	Any discount?
Eating			
phed	spicy	tod	deep fried
chan mai gin phed.	I don't like spicy food.	phad	stir fried
phed mai?	Is it spicy?	kaeng	curry (quite spicy)
nua woa	beef	kaeng jued	soup
nua moo	pork	tam ma chak aria?	What is it made from?
gai	chicken	a roi mai?	Is it tasty?
pla	fish	a roi	tasty / good
goong	shrimp / lobster	mai a roi	not tasty
phak	vegetable	nam plao	water
khai	egg	cha yen	iced tea
khao	rice	ka fair	coffee
kem	salty	khoa perm	some more
priaw	sour	whan	sweet
Chan/ Pom hew khao	I'm hungry	im mak	very full
Number			
nueng	1	sib ed	11
song	2	sib song	12
sam	3	yi sib	20

si	4	yi sib ed	21
ha	5	sam sib	30
hok	6	paed sib ha	85
ched	7	gao sib gao	99
paed	8	nueng roi	100
gao	9	nueng pan	1,000
sib	10	ched muen	70,000

Popular Thai Food

Rice is the main dish for Thais. They often have steamed rice (khao) together with other accompanying dishes (kap khao) – curry, soup, stir fried vegetables.

Here is the list of common accompanying dish (kap khao):

Thai (Food)	English	Thai (food)	English
kaeng khiao wan gai	green chicken curry	khai tom	boiled egg
kaeng phed nua	red beef curry	khai dao	fried egg
kaeng som	sour curry	khai toom	steamed egg
nam prik ka pi	shrimp paste dip	khai cheao	omelet
phad phak	stir fried vegetables	khai look koey	boiled egg fried with tamarind sauce
khao phad	fried rice	kuay tiew	noodle
tom	clear soup	som tam	green papaya salad
tom yam	spicy soup	tom kha kai	chicken and galangal in coconut milk soup
yam	spicy and sour salad	pad kra prao *moo*	stir fried pork and basil
khai pa lo	hard-boiled eggs in sweet gravy	ka na *moo* krob	crispy pork with kale
phad kee mao *talay*	noodle fried with spicy seafood	*moo* kra tieam	stir fried pork with garlic

Appendix

Important Telephone number

Silpakorn University Phetchaburit IT campus (head office)		032 594029-30
Faculty of Animal Sciences and Agricultural Technology (head office)		032 594037-38
Computer center	032 594029	ext. 41233 / 032 594119
Library	032 594029	ext. 41530 / 032 594043-50
Security office	032 594029	ext. 41200
Post office	032 594029	ext. 41085
Health Care Service	032 594029	ext. 41788 / 032 594115

Program Committee

Director

Assist. Prof.Dr. Chaowanee Laosutthipong	e-mail: laosutthipong_c@silpakorn.edu

Committee

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Further information of the course

M.Sc

Ph.D.

Proposal format guideline

TITLE (English)

TITLE (THAI)

A Thesis Proposal Presented by

NAME and STUDENT IDENTIFICATION NUMBER

(place)

(date of proposal examination)

Abstract

(not more than 1 page A4) .....

Objectives

(short description, separated into items in number, 2-5 lines each, clearly describe the output of your work and lead to solve and/or answer any specific problem(s)) .....

Background and Preliminary Data

(unlimited pages) .....

Methodology *

(IMPORTANT PART, state clearly and in detail of activities with aims and detailed procedures, necessary references quoted, of 1.5 year work for the Master's (starting from the 2nd semester of the 1st year in November) or of 3 year work for the doctoral degree, including the instruments used, data analysis method(s) and/or permit required such as experimental animal, hazardous materials).....etc.

Research Plan

Activity	**Year 1**	**Year 2**	
	Nov. 20xx – May 20xx	Jun. – Oct. 20xx	Nov. 20xx – May 20xx
1.			
2.			

Expected Results

References

(Format – see Graduate Studies' rule for thesis)

Faculty of Animal Sciences and Agricultural Technology, Silpakorn University

Announcement on

Procedure of Making an Academic Appeal and Grade Verification

.....

To achieve the effectiveness of making an academic appeal / complaint and grade verification, faculty of Animal Sciences and Agricultural Technology hereby announces the procedures designed to ensure the process completion for students and declare as the following.