



MIAT

MAEJO INSTITUTE OF AGRICULTURAL
TECHNOLOGY
BULLETIN 1985 - 1986

ท้องส์มุด รถบันเทคโนโลยีการเกษตมเปรี

MAEJO INSTITUTE OF AGRICULTURAL TECHNOLO

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The main objective of Maejo Institute of Agricultural Technology is to prepare students for specific occupations in agriculture. Upon their graduation it is hoped that they will serve the community through constructive citizenship by propagating the ideas and practices of modern technology to their neighbors.

Development of the Institute

Established in 1934 as a regional Agricultural Teacher Training School by the Ministry of Education, Maejo Institute of Agricultural Technology is one of the oldest agricultural education institutions in Thailand. In 1938, the school became a College of Agriculture under the administration of the Ministry of Agriculture. When the College of Agriculture was moved to Bangkok in 1939, the school at Maejo served as a pre-agricultural school, preparing students for higher education at the College in Bangkok. The Ministry of Education through the Department of Vocational Education extensively expanded agricultural education in 1948. The expansion included the establishment of Chiangmai School of Vocational Agriculture to replace the old pre-agricultural school.

In 1975 Chiangmai School of Vocational Agriculture was chartered to become Maejo Institute of Agricultural Technology.

In early 1981, the Institute proposed graduate programs for the departments of agricultural economics and extension. At present, the Institute is developing the needed resources to be able to carry out these graduate programs effectively.

Presently, Maejo Institute of Agricultural Technology (MIAT) is divided into two faculties and two offices as follows:

- I. Office of the Rector
- II. Faculty of Agricultural Production
- III. Faculty of Agricultural Business
- IV. Office of Agricultural Research and Extension

อกินันทนาการ จาก ๑. ฮราม เพียงผล

Administration

The law passed in 1975 has provided for academic instruction, research and extension education, and for the management of Maejo Institute of Agricultural Technology. The Institute is under the direction of the council composed of the following people.

- 1. Chairman of the Council.
- 2. Vice-Chairman: Rector of the Institute.
- 3. Not more than nine administrators of the Institute, vice-rectors and deans included.
- 4. Not more than nine elected representatives from the academic staff of the Institute.
- 5. Not more than nine well-known scholars from outside the Institute.

The Council

5 T. F100 TCT	
Prof. Dr. Prasert Na Nakorn	Chairman
Assoc. Prof. Yanyong Sitdhichai	Vice Chairman
H.E. Preeda Patanatabutr	Member
H.E. Amnuay Yossuk	,,
Mr. Athorn Chonhenchob	
Prof. Dr. Sanga Sabhasri	-77
Dr. Chumpon Sawadiyakorn	33
Mr. Panlert Buranansilapin	**
Dr. Sukhum Assawet	11
Assoc. Prof. Dr. Boontham Tesna	**
Dr. Boonrawd Supa-udomlerk	Member
Assoc. Prof. Dr. Thep Phongparnich	**
Dr. Thongchai Tonguthaisri	"
Asst. Prof. Chamnong Yavichai	• • • • • • • • • • • • • • • • • • • •
Mr. Saran Permpool	,,,
Mr. Prayong Saiprasert	**
Assoc. Prof. Pleerote Pleumsamran	**
Dr. Anucha Siri	**
Mr. Chamnian Yosras	,,
Asst. Prof. Nipon Jayamangkala	***
Asst. Prof. Praphan Osahaphant	
Mr. Vichien Vanchainavin	• • • • • • • • • • • • • • • • • • • •
Asst. Prof. Suporn Ketvaraporn	Secretary

Maejo Institute of Agricultural Technology Promotional Committee

Dr. Sanga Sabhasri Chairman
Permanent Secretary of Ministry of
Science, Technology, and Energy

Prof. Yanyong Sitdhichai Vice Chairman
MIAT Rector

Dr. Chumpon Swadiyakorn Member Secretary General, National Research Council of Thailand

Dr. Kasem Sanidwongse "
Deputy to Permanent Secretary of Ministry of Science, Technology, and Energy

Mr. Meta Ua-Apiyakul Member (A noted farmer)

Mr. Prapat Sitdhisang "
(Farmer and Alumnus)

Mr. Hiroshi Shigeta

(Agricultural Attache, Embassy of Japan)

Mr. Ernest Briskey

(Science Attache, Embassy of USA)

Khunying Dr. Kalaya Soponpanich

(Business person)

Mrs. Sumol Saikaew

(NRCT Secretary)

Secretary

Office of the Rector

Rector:

Assoc. Prof. Yanyong Sitdhichai

Vice-Rector of Planning Development:

Assoc. Prof Boontham Tesna

Vice-Rector of Academic Affairs:

Dr. Boonrawd Supa-Udomlerk

Vice-Rector of Administration:

Asst. Prof. Suporn Ketvaraporn

Head of Central Divisions:

Asst. Prof. Charas Kayai

Head of Student Affairs Division:

Mr. Thong-In Hinkum

Head of Educational Services Division:

Asst. Prof. Voravith Vinitketkumnuen

Head of Planning Division:

Mr. Buncha Trivithayakun

Faculty Members by Academic Qualification

B.A./B.S. M.A./M.S. Ph.D. Total 46 66 8 120

In addition to the personnel mentioned above, the Institute employs at various levels an administrative staff of 82 persons.

Student Numbers

Enrollment figures for the academic year 1984-1985 are

	Female	Male	Total
Undergraduate	271	1068	1339
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Graduate/Post Graduate

Academic Calender

Acc. No........ Call No.

First Semester

Registration First week of June
Orientation for new students Second week of June
Classes begin Second week of June
Classes end First week of October
Final examinations begin Second week of October
Semester ends Third week of October

Second Semester

Registration First week of November
Classes begin First week of November
Classes end First week of March
Final Examinations begin First week of March
Semester ends Third week of March

General Enquiries

Enquiries about the Institute should be directed to:

The Vice-Rector for Academic Affairs
Maejo Institute of Agricultural Technology
Chiangmai 50290
Thailand
Telephone (053-244858)

Admission to Undergraduate Study

Admission to MIAT is granted to applicants who have received an associate degree in vocational technical agriculture and have passed the entrance examination.

1. Application

Application is open to full-time students only. Announcements will be made by MIAT on details of application procedures.

2. Qualifications

Eligible applicants must

- a. have received associate degrees in vocational agriculture and be able to continue their studies at MIAT, at the levels equivalent to third and fourth years of undergraduate study.
- b. have never been indicted on criminal charges.
- c. have never exercised ill-conduct.
- d. have never been expelled from an institution due to violation charges.

3. Required Documents for Application

- a. a completely filled-up application form.
- b. a copy of transcript of academic record.
- c. photographs with specifications announced.

4. Entrance Examination

It consists of three parts: written, practical, and an interview.

5. Enrollment

Applicants who have been selected must report to the Office of the Rector on the date announced and present the following documents: a certification of medical examination, a copy of resident's registration, a copy of diploma of associate degree, photographs, and a letter of approval from legal guardian.

6. Registration

Each student is assigned to an advisor who assists him/her registration of courses according to study plan. In paying tuition fees, students must present registration cards signed by their advisors.

Late registrants are fined ten bahts per day, excluding official holidays.

A student who fails to register without notifying the Registrar within 30 days from the first day of classes have to relinguish his student status.

7. Number of Credit Hours.

Students must register a minimum of 12 units, or a maximum of 21 units each semester, except for the last semester before graduation wherein they may register more than 21 units. Exceptions need the approval from the advisor and the department head.

Student's Obligations

- a. Students who are absent from class without cancellation of the course within 15 days after class commencement will receive an F grade.
- b. Students must enroll every semester consecutively until graduation. A reasonable withdrawal may be requested and must be approved by the department head.
- c. Being late for class for more than 15 minutes is considered as absent.
- d. Students may leave, if the instructor fails to be present during the first 15 minutes of class without prior notification.
- e. A Student may cancel any registered course with the approval of his advisor and department head. Then he must bring the approved request to the instructor within 60 days of class commencement, otherwise he will receive a failure grade for the course.
- f. A student may switch a course with the approval for his advisor and department head. Then he must notify the instructors of the two courses.

- g. Students are retired from the Institute under these conditions:
 - 1. if the cumulative grade point average (GPA) is less than 1.50 after the first semester.
 - if the cumulative GPA is less than 2.00, the student will be on probation, and if the GPA of the following semester is less than 2.00, the student must withdraw.
 - 3. if a student has finished all requirements for the degree but his GPA is below 2.00, he may upgrade any D courses before the end of the 8th semester. Eight semesters is the maximum length of time allowable for a student to work toward the degree, after which his student status is terminated.
- h. Students who do not meet the minimum 80% class attendance in a course will automatically get a final grade of F.
- i. The department may not open an elective course unless ten students have registered in it.
- Students who are absent continuously for more than 15 days without reasonable excuses will be withdrawn.
- k. Eligible candidates for the Bachelor's degree must have completed all the requirements stated in the curicular, according to their majors.
- Eligible candidates for the Bachelor's degree must have enrolled at the Institute consecutively for at least two semesters but not for more than eight semesters.

Grading System

A students' final grade is rated according to the value system, as follows:

Grade	Level of Performance	Grade Point
A	Excellent	4
В	Good	3
C	Fair	2
D	Pass	1
F	Fail	0
Grade	Level of Performance	Grade Points
Fa	Fail-absent	0
V	Visitor	
W	Withdraw	14-1
S	Satisfactor	-
U	Unsatisfactory	114/1
1	Incomplete	Ġ.

Academic Honors

Students who have completed the requirements for Bachelor degree with exceptional scholastic averages and have never received an F grade graduate with distinction.

The levels of recognition and the grade point averages required for each are:

First Honors 3.76 - 4.00 Second Honors 3.50 - 3.75

Scholastic Medal Awards

- A student who has fully completed the requirements for Bachelor degree with the cumulative GPA of 3.51 and above, excluding the grade for the last year is awarded a copper medal.
- Students who have completed all requirements for the Bachelor degree with the cumulative GPA from each department, between 3.25 - 3.49, are awarded a silver medal.
- 3. Students who have completed the requirements for the Bachelor degree with the cumulative GPA from each department, of 3.50 and above are awarded a gold medal.

Graduation

The Maejo Institute of Agricultural Technology awards diploma for the Bachelor Degree in Agricultural Technology (B. Ag. Tech.) to graduating students who have completed the curricular requirements with the grade point average of at least 2.00.

Requests for graduation will be considered by the Council of the Institute.

Graduation convocation takes place once a year.

Class Attendance

When absence from class is essential, the student must present the request with the signed approval of his advisor to the instructor. A medical certification is required if students had incurred more than three days of absence.

Absence from class for more than 15 days requires parents' assurance which must be submitted to the student's department head with the signature of his advisor.

Any student who wishes to withdraw or leave the Institute before the end of the semester must ask for his parents' certification letter and present it to the Dean.

FACULTY OF AGRICULTURAL PRODUCTION

The Faculty of Agricultural Production must play a major role in maintaining the good name of MIAT in agricultural instruction. It is expandry to accommodate more students, and in the near future more major fields of study will be opened. Because the main objective is to graduate self-reliant agriculturists who expected to serve the private sector of the community, the instruction must emphasize the practical aspects. Curricula are developed to combine training in technical agriculture, science, and business.

Dean: Mr. Saran Permpool

Associate Dean: Assoc. Prof. Pleerote Pleumsamran

Faculty Secretary: Mr. Chamnian Yosras

Department of Plant Technology

Head: Mr. Boon Glomjoho, B.S. (Agr.) KU

Academic Staff:

Assoc. Prof. Thepprasong Vorayos, B.S. (Agr.) KU

M.S. (Ag. Ed.), U. of Arkansas

Asst. Prof. Bampen Chutima, B.S. (Agr.), Louisiana State University

Asst. Prof. Ahnon Thiangtrong, B.S.A., Ag. Ed., UPLB M.S. (Agronomy),

Asst. Prof. Swing Peng-ont, B.S. (Agr.), Ag. Ed., KU

B.S.A. Ag. Ed. UPLB

Asst. Prof. Thanit Malisuwan, M.S. (Horticulture), Cal poly SLO

Asst. Prof. Sammarn Katonyoo, B.S. (Agr.) Horticulture, KU

Asst. Prof. Vorawit Winichketkamnun B.Sc. (Agr.), Agronomy, CMU

M.S. (Crop Science), Cal Poly SLO

Mrs. Rewadee Vuthijumnonk, B.Sc. (Agr.) Horticulture, CMU

Mr. Kittipong Totirakul, B.Sc. (Agr.), Ag. Ed., CMU

Mr. Banterng Sriburpeun, B.S. (Agr.), Ag. Ed., KU

Cert in Tropical Horticulture Hawaii

Mr. Pramote Klib-ngerh, B.S. (Agr.), Ag, Ed., KU

M.S. (Horticulture) UPLB

Asst. Prof. Songvut Pechpradab, B.S.A., Agronomy, CLSU

M.S. (Horticulture) CLSU

Asst. Prof. Nipon Jayamangkala, B.S.A., Soils, CLSU

M.S. (Horticulture) CLSU

Certificate in Seed Tech., Masey U.

Mrs. Khanitta Duangsonk, B.Ag. Tech. (Horticulture), MIAT

Asst. Prof. Phandach Puranapun, B.S. (Agr.) Field Crops, KU

Ph.D. (Crop Production), U. of Reading

Asst. Prof. Dumre Roongsook, B.S. (Agr.), Entomelogy, KU

M.S. (Entomology), U. of Kentucky

Mr. Apichart Suankamgong, B. Ag. Tech. (Agronomy), MIAT Miss Sisiporn Loaterdpong, B.S. (Agr.), Soils, KU

M.S. (Genetics), KU

Mr. Satit Wimol, B.Ag. Tech. (Vegetable Crops), MIAT

Mr. Prasit Noree, B.Ag. Tech. (Vegetable Crops), MIAT

M.S. (Horticulture), KU

Mr. Surasak Sritunya, B.S.A., Horticulture, CLSU

M.S. (Horticulture), CLSU Ph.D. (Agronomy), UPLB

Mr. Weerasak Prokati, B.S. (Agr.), Agronomy, KU

M.S. (Agronomy-Seed Technology), Mississippi State Univ.,

Ed. D. (Agricultural and Extension Ed.)

Mr. U-Tai Roongruangsree, B.Sc. (Agr.) CMU.

M. Agr. (Plant Pathology), U. of Sydney

Cert. in Plant Protection, Netherlands

Mr. Chalit Phongsuphasamit, B. Ag. Tech. (Horticulture), MIAT M.S. (Horticulture), KU

Plant Technology

Curricula (for two academic years)

Structure (mini	mum requirements)	no. of credits	070
The second secon	ic Requirements	12	15.79
	ated Courses	20	26.32
	jor Courses	33	43.42
IV. Ele		6	7.89
	cial Problems	3	3.95
	ld Work	2	2.63
	Total	76	100.00
Field of Study	: Agronomy		
I. Basic Requi	irements	no. of credits	no. of hours/week
(minimu	m requirement = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 0
GE 303	Thai Government and Social	3	3 - 0
	Development		
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and Personal	3	3 - 0
	Management		
II. Related C	ourses		
(minimu	m requirement = 20 credits)		
GE 306	Applied Plant Physiology	3	2 - 3
GE 308	Genetics	3	2 - 3
FM 416	Farm Machinery	3	2 - 3
AI 412	Post-Harvest Processing	3	2 - 3
EC 305	Economic and Agricultural	1	1 - 0
	Technology Development		
GE 306	Applied Plant Physiology	3	2 - 3
SF 311	Introduction to Soil Science	4	3 - 3
SF 411	Soil and Water Management	3	2 - 3
III. Major Co	purses	no. of credits	no. of hours/week
(minimu	m requirement = 33 credits)		(lecture-lab.)
PT 330	Farm Crop Production		3 2 - 3
PT 420	Plant Pests and Their Control		3 2-3
PT 421	Crop Diseases and Their Control		3 2-3
PT 422	Weeds and Their Control		3 2 - 3
PT 432	Farm Crop Improvement		3 2 - 3
PT 433	Seed Technology		3 2 - 3
PT 448	Experimental Techniques and Analysis		3 2 - 3

PT 499	Seminar	1	1 - 0
PT 511	Farm Practices 1	1	0 - 3
PT 512	Farm Practices 2	1	0 - 3
PT 513	Special Field Crop 1	2	1 - 3
PT 514	Special Field Crop 2	3	2 - 3
PT 515	Special Field Crop 3	3	2 - 3
IV. Electives		no. of credits	no. of hours/week
(minimu	m requirement = 6 credits)		(lecture-lab.)
PT 434	Industrial Crops I	3	2 - 3
PT 435	Industrial Crops II	3	2 - 2
PT 436	Pasture and Forage Crops	3	2 - 3
PT 442	Dry Land Farming	3	
PT 462	Plant Hormones	3	2 - 3
V. Special Pro	oblems		
A CONTRACTOR DESIGNATION	Special Problems	3	· ·
VI. Field Wor	·k		
PT 498	Field Work	2	
Field of Study	: Ornamental Horticulture	1	
I. Basic Requ	irements	no. of credits	no. of hours/week
	m requirement = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 1
GE 303	Thai Government and Social	3	2 - 2
	Development		
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and personal	3	3 - 0
	Management		
II. Related Co	ourses	no. of credits	no. of hours/week
(minimu	m requirement = 17 credits)		(lecture-lab.)
GE 306	Applied Plant Physiology	3	2 - 3
GE 308	Genetics	3	2 - 3
FM 412	Farm Machinery	3	2 - 3
EC 305	Economic and Agricultural	1	1 - 0
	Technology Development		
EC 310	Economic Growth in Agriculture	3	3 - 0
SF 311	Applied Soil Science	4	2 - 4
SF 411	Soil and Water Management	3	2 - 3
III. Major Co	ourses	no. of credits	no. of hours/week
(minimu	m requirement = 36 credits)		(lecture-lab.)
PT 351	Ornamental Plants and Identification	2	1 - 3

PT 420	Plant Pests and Their Control	3	3 2 - 3
PT 432	Farm Crop Improvement	3	3 2 - 3
PT 433	Seed Technology	3	3 2 - 3
PT 451	Ornamental Plant Diseases	3	3 2 - 3
PT 453	Landscape Planning and Design	3	3 2 - 3
PT 457	Commercial Flower Production	3	3 2 - 3
PT 459	Flower Forcing	3	3 2 - 3
PT 448	Experimental Techniques and Analysis	3	3 2 - 3
PT 499	Seminar	1	1 - 0
PT 511	Farm Practices 1	1	0 - 3
PT 511	Farm Practices 2	1	0 - 3
PT 552	Special Horticultural Crop-Orchid 1	3	3 2 - 3
PT 553	Special Horticultural Crop-Orchid 2	3	3 2 - 3
IV. Electives		no. of credits	no. of hours/week
(minimu	m requirement = 6 credits)		(lecture-lab.)
PT 422	Weeds and Their Control	3	3 2 - 3
PT 433	Seed Technology	3	3 2 - 3
PT 434	Commercial Seed Production and	3	3 2 - 3
	Processing		
PT 448	Experimental Techniques and Analysis	3	3 2 - 3
PT 454	Turf Grass Management	3	2 - 3
PT 455	Arboriculture	3	3 2 - 3
PT 456	Pot Plant Production	3	3 2 - 3
PT 458	Ornamental Plant Judging	3	3 2 - 3
PT 460	Retail Nursery Management	3	3 2 - 3
PT 462	Plant Hormones	3	3 2 - 3
PT 463	Landscape Design and Construction	3	3 2 - 3
PT 554	Advanced Orchid Technology	.5	5 2 - 4
V. Special Pro	oblems		
PT 510	Special Problems	3	3
VI. Field Wor	rk		
PT 498	Field Work	.2	-
Field of Study	: Vegetable Crop Production		
1. Basic Requ	irement	no. of credits	no. of hours/week
(minimu	m requirement = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 2 - 1
GE 303	Thai Government and Social Development	3	3 2 - 2
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and Personal	3	3 - 0
	Management		

II. Related C	oureses	no. of credits	no. of hours/week
(minimu	m requirement = 17 credits)		(lecture-lab.)
EC 305	Economic and Agricultural		
	Technology Development	3	1 - 0
GE 306	Applied Plant Physiology Development		3 2 - 3
GE 308	Genetics	3	3 2 - 3
FM 412	Farm Machinery		3 2 - 3
SF 311	Applied Soil Science	4	3 - 3
SF 411	Soil and Water Management		2 - 3
III. Major Co	ourses		
(minimu	m requirement = 36 credits)		
SF 321	Fertilizer Technology and Use	3	2 - 3
AI 406	Processing of Fruit and Vegetables	3	2 - 3
PT 420	Plant Pests and Their Control	3	2 - 3
PT 421	Crop Diseases and Their Control	3	2 - 3
PT 422	Weeds and Their Control	3	
PT 433	Seed Technology	3	2 - 3
PT 448	Experimental Techniques and Analysis	3	2 - 3
PT 470	Vegetable Crop Production and		
	Processing	4	2 - 6
PT 471	Harvesting, Packaging, and Marketing	4	
	of Vegetable Crops		
PT 473	Vegetable Crop Management	4	3 - 3
PT 474	Vegetable Crop Improvement and		
	Seed Production	3	2 - 3
		no. of credits	no. of hour/week
			(lecture-lab.)
PT 499	Seminar	1	1 - 0
PT 511	Farm Practices 1	1	0 - 3
PT 512	Farm Practices 2	1	0 - 3
VI. Electives			
(minimum requir	rement = 6 credits)		
PT 462	Plant Hormones	3	2 - 3
PT 472	Environmental Controlled in	3	2 - 3
	Horticulture		
PT 475	Tomato Production	3	2 - 3
AB 430	Apply Agricultural Marketing	3	3 - 0
V. Special Pro	oblems		
PT 510	Special Problems	3	- 5
VI. Field Wor	rk		
PT 498	Field Work	2	-

Field of Study: Pomology

I. Basic	N. O. S. W.		no.of credits	
		m requirements = 13 credits)		(lecture-lab.)
	E 301	Technical English 5	2	2 - 0
	E 303	Thai Government and Social Development	3	2 - 2
G	E 304	Principles of Statistics	3	3 - 0
G		Physical Education	1	0 - 2
E	C 305	Economic and Agricultural	1	1 - 0
		Technology Development		
A	B 411	Human Relationships and Personal Manage	ement 3	3 - 0
II. Relat	ted C	ourses	no.of credits	no.of hours/week
(m	ninimu	m requirements = 17 credits)		(lecture-lab)
G	E 306	Applied Plant Physiology	3	2 - 3
G	E 308	Genetics	3	2 - 3
SF	311	Applied Soil Science	4	3 - 3
P	Г 341	Introduction to Pomology	2	1 - 3
P	Г 352	Plant Materials & Plant Identification	2	1 - 3
FN	M 412	Farm Machainary	3	2 - 3
III. Maj	or Co	urses	no.of credits	no.of hours/week
(m	inimu	m requirements = 35 credits)		(lecture-lab)
P	Г 361	Plant Judging	2	1 - 3
SF	411	Soil and Water Management	3	2 - 3
P	Γ 420	Plant Pests and Their Control	3	2 - 3
P	Г 421	Crop Diseases and Their Control	3	2 - 3
P	Г 432	Farm Crop Improvement	3	2 - 3
P	Γ 448	Experimental Techniques and Anylysis	3	2 - 3
P	Г 480	Harvesting Packing and Marketing of Fruit Crops	3	2 - 3
p	Γ 481	Fruit Crops Processing	3	2 - 3
	Г 482	Orchard Management	3	2 - 3
	Г 499	Seminar	1	1 - 0
	Г 511	Farm Practices 1	1	0 - 3
IV. Elec	tive C	ourses	no.of credits	no.of hours/week
		m requirements = 6 credits)	00100,000000	(lecture-lab)
	Г 462	Plant Hormones	3	2 - 3
	Γ 472	Environmental Controlled in		
		Horticulture	3	2 - 3
p	Г 490	Physiology of Fruit Crops	3	2 - 3
	Г 491	Apicuture	3	2 - 3
	Г 493	Agro-Forestry	3	2 - 3
	Г 531	Plantation of Industrial Crops	3	2 - 3
1	1 231	Tamenton of Industrial Crops	.5.	2 - 3

V. Special Problems	
PT 510 Special problems	3
VI. Field Work	
PT 497 Field Work	2

Department of Animal Technology

Head: Asst. Prof. Anucha Siri, B.S. (Agr.), Animal Science, KU

M.S. (Dairy Production), Oklahoma State U.

Ph.D. (Animal Nutrition), UPLB

Cert in Prof. English, Oklahoma State U.

Academic Staff:

Assoc. Prof. Pleerote Pleumsamran, D.V.M., KU
M.S. (Animal Science) Michigan state U.

Mr. Boonlue Somboonwongse, B.Ag. Tech. (Poultry Seience), MIAT Cert, in Fish Culture, Taiwan

Asst. Prof. Narin Thongwittaya, B.S. (Agr.), Animal Science, KKU
M.S. (Animal Production), KU

Asst. Prof. Viroj Chantarat, D.V.M., CU

Cert. in Poultry Husbandry

Mr. Sermsak Suvanasilpa, B.S. (Agr.), Animal Science, KU
M. Agr. (Animal & Dairy Science), Auburn U.

Mr. Sompong Srisa-ard, B.S. (Agr.), Animal Science, KU

Asst. Prof. Ghirasit Songprasert, B.Sc. (Agr.), Animal Husbandry, CMU

M.S. (Cattle Production) KU

Mr. Manit Tawarpitruck, B.Ag. Tech. (Poultry Science), MIAT

Asst. Prof. Pisoot Niumsup, B.Sc. (Agr.), Animal Science, CMU

M.S. (Animal Science) KU

Asst. Prof. Permsak Siriwan, B.S. (Agr.), Animal Science, KU

M.S. (Animal Nutrition) Mississippi State U.

Mr. Chamnian Yosraj, B. Ag. Tech. (Poultry Science), MIAT

M.S. (Animal Science), UPLB

Mr. Winai Yothinsirikul, B.Sc. (Agr.), Animal Science, KKU

M.Sc. (Animal Science), KKU

Mr. Pramote Saitrakhosar, B.S. (Agr.), Animal Science, KU

M.S. (Animal Production), KU

Animal Technology Curricula (for two academic years)

Structure (minin	num requirements)	no. of credits	0/0
	ic Requirements	12	15.79
	ated Courses	21	27.63
III. Ma	or Courses	32	42.11
IV. Elec		6	7.89
V. Spe	cial Problems	3	3.95
VI. Fiel		2	2.63
	Total	76	100.00
Field of Study	: Poultry Technology		
I. Basic Requi	rements	no. of credits	no. of hours/week
(minimu	m requirements = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 0
GE 303	Thai Government and Social		
	Development	3	2 - 2
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and Personal Management	3	3 - 0
II. Related Co	ourses		
(minimu	m requirements = 21 credits)		
GE 308	Genetics	3	2 - 3
GE 309	General Microbiology	3	2 - 3
GE 313	Fundamental Biochemistry	3	2 - 3
FM 413	Farm Electricity, Plumbing and Sanitation	3	2 - 3
FM 431	Wood and Concrete Technology	3	1 - 6
III. Major Co		no.of credits	no.of hours/week
(minimu	m requirements = 32 credits)		(lecture-lab.)
EC 305	Economics and Agricultural	1	1 - 0
	Technology Development		
AT 310	Introduction to Animal Science	2	2 - 0
AT 312	Anatomy and Physiology of Farm Animals	3	2 - 3
AT 311	Animal Reproduction	3	2 - 3
AT 320	Poultry Farm Management	3	2 - 3
AT 420	Poultry Nutrition	3	2 - 3
AT 421	Incubation and Hatchery Management	3	1 - 6
AT 423	Poultry Breeding	3	2 - 3

AT 425	Poultry Diseases and Sanitation	3	2 - 3
AT 426	Poultry Housing and Equipment	3	2-3
AT 444	Poultry Judging	2	1-3
AT 499	Seminar	1	1-0
AT 511	Farm Practices 1	1	0 - 3
AT 512	Farm Practices 2	1	0 - 3
AT 513	Selected Poultry Production	3	2 - 3
AI 419	Poultry Products Technology	3	2 - 3
IV. Electives			
(minimu	m requirements = 6 credits)		
AT 412	Artificial Insemination	3	2 - 3
AT 428	Poultry Feed Crops	3	2 - 3
AT 451	Avian Physiology	3	2 - 3
AT 480	Experimental Techniques and Analysis in Animal Research	3	2 - 3
AB 430	Apply Agricultural Marketing	3	3 - 0
V. Special Pro	oblems	no.of credits	no.of hours/week
PT 510	Special Problems	3	-
VI. Field Wo	rk		
PT 498	Field Work	2	+
Field of Study	: Dairy Production		
I. Basic Requ	irements		
(minimu	m requirements = 12 credits)		
GE 301	Technical English 5	2	2 - 0
GE 303	Thai Government and Social Development	3	3 - 0
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	(1)	0 - 2
AB 411	Human Relationships and Personal	3	3 - 0
	Management		
II. Related C	ourses		
(minimum	m requirements = 21 credits)		
GE 308	Genetics	3	2 - 3
GE 309	General Microbiology	3	2 - 3
GE 313	Fundamental Biochemistry	3	2 - 3
FM 412	Farm Machinery	3	2 - 3
FM 413	Farm Electricity, Plumbing and	3	2 - 3
	Sanitation		
EC 305	Economics and Agricultural Technology Development	(1)	1 - 0
AT 310	Introduction to Animal Science	2	2 - 0

AT 312	Anatomy and Physiology of Farm Animals	3	2 - 3
III. Major Co	ourses	no.of credits	no.of hours/week
(minimu	m requirements = 32 credits)		(lecture-lab.)
AT 311	Animal Reproduction	3	2 - 3
AT 412	Artificial Insemination	3	2 - 3
AT 461	Dairy Feeds and Feeding	3	2 - 3
AT 462	Forage Crops and Range Management	1	0 - 3
AT 465	Dairy Cattle Judging	2	1 - 3
AT 466	Lactation	2	2 - 3
AT 467	Dairy Improvement	3	2 - 3
AT 468	Milk and Milk Products	4	2 - 6
AT 468	Dairy Diseases and Sanitation	4	2 - 6
AI 407	Dairy Products Technology	3	2 - 3
AT 511	Farm Practices 1	1	0 - 3
AT 512	Farm Practices 2	1	0 - 3
AT 499	Seminar	1	1 - 0
IV. Electives			
(minimu	m requirements = 6 credits)		
AT 411	Animal Nutrition	3 .	2 - 3
AT 413	Animal Growth	3	2 - 3
AT 470	Milk Plant Management	3	2 - 3
AT 471	Dairy Cooperatives and Marketing	3	1 - 6
AT 480	Expermental Techniques and Analysis in Animal Research	3	2 - 3
SF 411	Soil and Water Management	3	2 - 3
FM 421	Farm Irrigation and Drainage	3	2 - 3
AI 402	Meat Technology	3	2 - 3
	Apply Agricultural Marketing	3	3 - 0
V. Special Pro	oblems	no.of credits	no.of hours/week (lecture-lab.)
PT 510	Special Problems	3	-
VI. Field Wor	k		
PT 498	Field (Work	2	4
Field of Study	: Beef Production		
Curricula			
I. Basic Requi	rements	no.of credits	no.of hours/week
(minimum	n requirements = 11 credits)		(lecture-lab.)
GE 301	Technical English 5	3	3 - 0

GE 303	Thai Government and Social Development	3	2 - 2
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
EC 305	Economics and Agricultural Technology Development	1	1 - 0
AB 411	Human Relationships and Personal Management	3	3 - 0
II. Related Co	ourses	no.of credits	no.of hours/week
(minimu	m requirements = 24 credits)		(lecture-lab.)
AT 310	Introduction to Animal Science	2	2 - 0
AT 312	Animal Reproduction	3	2 - 3
AT 312	Anatomy and Physiology of Farm Animals	3	2 - 3
GE 308	Genetics	3	2 - 3
GE 309	General Microbiology	3	2 - 3
GE 313	Fundamental Biochemistry	3	2 - 3
FM 412	Farm Machinery	3	2 - 3
FM 413	Farm Electricity, Plumbing and Sanitation	3	2 - 3
III. Major Co	purses	no.of credits	no.of hours/week
(minimu	m requirements = 30 credits)		(lecture-lab.)
AT 331	Beef cattle Farm Management	3	2 - 3
AT 412	Artifical Insemination	3	2 - 3
AT 413	Animal Growth	3	2 - 3
AT 460	Meat Inspection	2	1 - 3
AT 461	Cattle Feed and Feeding	3	2 - 3
AT 462	Forage Crops and Pasture Management	3	2 - 3
AT 463	Meat and Meat Products	3	2 - 3
AT 467	Animal Breeding and Improvement	3	2 - 3
AT 468	Cattle Diseases and Sanitation	3	2 - 3
AT 499	Seminar	1	1 - 0
AT 511	Farm Practice I	1	0 - 3
AT 512	Farm Practice II	1	0 - 3
IV. Elective		no.of credits	no.of hours/week
(minimu	m requirements = 6 credits)		(lecture-lab.)
AT 411	Applied Animal Nutrition	3	2 - 3
AT 465	Cattle Judging	2	1 - 3
AT 472	Feedlot	3	2 - 3
AT 473	Animal Behavior	3	2 - 3

2 - 3 2 - 3
2 - 3
redits no.of hours/week (lecture-lab.)
4
5
credits no.of hours/week
(lecture-lab.)
2 - 0
2 - 2
3 - 0
0 - 2
3 - 0
credits no.of hours/week
(lecture-lab.)
1 - 0
2 - 3
2 - 3
2 - 0
2 - 3
2 - 3
2 - 3
3 2 - 3
credits no.of hours/week
(lecture-lab.)
3 2 - 3
2 - 3
3 2 - 3
2 - 3
3 2 - 3
2 1 - 3
3 2 - 3
2 - 3 3 2 - 3

AT 477	Swine Housing and Equipments	3	2 - 3
AT 499	Seminar	1	0 - 3
AT 511	Farm Practice I	1	0 - 3
AT 512	Farm Practice II	1	0 - 3
IV. Electtive	Courses	no.of credits	no.of hours/week
(minimu	m requirements = 6 credits)		(lecture-lab.)
AT 411	Applied Animal Nutrition	3	2 - 3
AB 430	Applied Agricultural Marketing	3	3 - 0
FM 431	Wood and Concrete Technology	3	1 - 6
AT 473	Animal Behavior	3	2 - 3
AT 478	Swine Judging	2	1 - 3
AT 479	Swine Marketing	3	2 - 3
V. Special Pr	oblems -	no.of credits	no.of hours/week (lecture-lab.)
PT 510	Special Problems	3	
VI. Field wor	k		
PT 498	Field Work	2	-
Field of Study	: Fisheries Technology		
I. Basic Requ	irements	no.of credits	no.of hours/week
	m requirements = 12 credits)	no.or credits	(lecture-lab.)
	Technical English 5	2	2 - 0
	Thai Government and Social Development	3	2 - 2
	Principles of Statistics	3	3 - 0
	Physical Education	1	0 - 2
AB 411	Human Relationship and Personal	3	3 - 0
	Management		5.0
II. Related C	ourses	no.of credits	no.of hours/week
(minimu	m requirements = 21 credits)		(lecture-lab.)
AB 310	Agricultural Marketing	3	3 - 0
GE 313	Fundamental Biochemistry	3	2 - 3
GE 305	Genetics	3	2 - 3
EC 305	Economics and Agricultural Technology	1	1 - 0
	Development		
GE 309	General Microbiology	3	2 - 3
AT 311	Animal Reproduction	3	2 - 3
AT 480	Experimental Techniques and Analysis Animal Research	3	2 - 3

	urses	no.of credits	no.of hours/week
(minimur	n requirements = 34 credits)		(lecture-lab.)
AT 315	Principles of Aquaculture	4	2 - 3
AT 420	Fishery Products Technology	3	2 - 3
AT 483	Principles of Fishpond Construction	3	2 - 3
AT 484	Fish Farm Management	3	2 - 3
AT 485	Fish Breeding	3	2 - 3
AT 486	Fish Feed and Feeding	3	2 - 3
AT 487	Fish Diseases and Parasites	3	2 - 3
AT 488	Ionthology	3	2 - 3
AT 489	Planktonology	3	2 - 3
AT 490	Fisheries Resource Management	3	2 - 3
AT 499	Seminar	1	1 - 0
AT 511	Farm Practice I	1	0 - 3
AT 512	Farm Practice II	1	0 - 3
IV. Elective		no.of credits	no.of hours/week
(minimur	n requirements = 6 credits)		(lecture-lab.)
AT 492	Fishery Law and Regulation	3	3 - 0
AT 493	Commercial Fish Culture	3	2 - 3
AT 494	Fishing Gears	2	2 - 0
AT 495	Fishery Literature	2	2 - 0
AT 496	Fishery Conservation	2	2 - 0
AT 497	Management of Aguatic Plants	2	1 - 3
V. Special Pro	oblems	no.of credits	no.of hours/week
			(lecture-lab.)
PT 510	Special Problems	3	
VI. Field Wor	·k		
PT 498	Field Work	2	

Department of Landscaping and Environmental Conservation

Head: Mr. Sopon MongkolWagna, B.Ag. Tech. (Horticulture), MIAT M.S. (Horticulture), KU

Academic Staff:

Mr. Somporn Yoktri, B.S. (Ag.), Ag. Ed., KU

Mr. Sirichai Hongvitayakorn, B. Arch. (Hons), C.U.

M.L.Arch. U. of Michigan

Landscaping and Environmental Conservation Curricula (for two academic years)

Structure (mini	mum requirements)	no. of credits	070
	sic Requirements	12	15.79
	ated Courses	18	23.78
	jor Courses	35	46.05
IV. Ele		6	7.89
	ecial Problems	5	6.57
v. 5pc	cetal i Toblems		
		76	100.00
Field of Study	y: Landscape Technology		
Curricula			
I. Basic Requ	irements	no. of credits	no. of hours/week
(minimu	m requirements = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 0
GE 303	Thai Government and Social		
	Development	3	3 - 0
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and Personal	3	3 - 0
	Management		
II. Related C	ourses	no.of credits	no.of hours/week
(minimu	m requirements = 18 credits)		(lecture-lab.)
LE 301	Ecology & Principles of Conservation	3	2 - 3
LE 302	Landscape Inventories	2	1 - 3
LE 303	Fundamental of Design	2	1 - 3
EC 305	Economics and Agricultural Technology Development	1	1 - 0
GE 306		3	2 - 3
SF 311	Applied Soil Science	4	3 - 3
PT 351	Ornamental Plants and Identification	3	2 - 3
III. Major Co	urses	no.of credits	no.of hours/week
(minimu	m requirements = 35 credits)		(lecture-lab.)
LE 314	Introduction to Landscape	3	2 - 3
	Architecture		
LE 315	Graphic Communication	2	1 - 3
LE 316	Plant Ecology	3	2 - 3
LE 317	Landscape Design I	3	2 - 3
LE 411	Planting Design I	3	2 - 3
LE 412	Planting Design II	3	2 - 3
LE 413	Landscape Design II	3	2 - 3

LE 414	Landscape Construction	3	2 - 3
LE 415	Urban & Regional Landscape Design	3	2 - 3
LE 416	Planning and Design of Recreation Areas	3	2- 3
LE 499	Seminar	1	1 - 0
LE 511	Landscåpe Practice I	1	0 - 3
LE 512	Landscape Practice II	1	0 - 3
PT 454	Turf Grass Management	3	2 - 3
IV. Elective		no.of credits	no.of hours/week
(minimu	m requirements = 6 credits)		(lecture-lab.)
LE 417	Management of Recreation Areas	3	2 - 3
LE 418	Architectural Design	3	2 - 3
LE 419	Interior Planting Design & Maintenance	- 3	2 - 3
PT 455	Arboriculture	3	2 - 3
PT 456	Pot Plant Production	3	2 - 3
V. Special Pr	oblems	no. of credits	
LE 498	Special Problems	3	
LE 510	Field Work	2	

Department of Soil and Fertilizers

Head: Asst. Prof. Pitoon Kitichaichananont, B.S. (Agr.), Soil Science, KU
M.S. (Soil Science), KU

Academic Staff:

Mr. Boonrawd Supa-udomlerk, B.S. (Agr.) Agronomy, KU
M.S. (Soil Science), UPLB
Ph.D. (Soil Science), UPLB
Asst. Prof. Banpote Tantiseri, B.S. (Agr.), Soil Science, KU
M.S. (Soil Science), Texas A & I U.
Mr. Somchai Ongprasert, B.S. (Agr.), Soil Secience, KU
M.S. (Soil Science), KU

Department of Farm Mechanics

Head: Mr. Rawat Phokha, B.S., Mech. Tech., ITVE Academic Staff:

Assoc. Prof. Kittipong Vuthijumnonk, B.Eng. (Irrigation), KU
M.Eng. (Civil Eng.), UC Davis
M.S. (Irrigation), UC Davis
Certi in Water Resource Eng.
and Management, Israel
Asst. Prof. Tavorn Suttipunta,
B. Eng. (Civil), King Mongut

Mr. Manut Komsang, Cert. in Mechanics, Vocational Teacher's College

Mr. Supote Eangkoonchorn,

Mr. Thienchai Sundusdec,

Mr. Rachata Chuaviroj,

B.S. (Agr.) Farm Mechanics, KU

B. Eng. (Agri). KU

B.S. (Electrical Engineering), CIT

M.Eng. (Electrical), UP

FACULTY OF AGRICULTURAL BUSINESS

Agricultural business is the counterpart of agricultural production. It is a discipline used in the management of production, the post-harvest management of the raw products, the manufacturingprocessing industry, the cooperative aspect of the production and business, the wholesale-detail trade, etc., till the end-user uses or consumes it.

It rests on the responsibility and ability of the development personnel to really cope with the problem of how to deal with the product once the peasant is encouraged to produce it. It is difficult to teach the peasant to produce a new products, but it is far more difficult to dispose it wisely and profitably, to convert it into salable or usable product acceptable by the market.

The Faculty of Agricultural Business encompasses these disciplines: agricultural business administration, economics and cooperatives, agricultural industry and agricultural extension.

Dean: Asst. Prof. Chamnong Yavichai Associate Dean: Mr. Prayong Saiprasert

Faculty Secretary: Mrs. Siriratana Pookkapund

Department of Business Administration and Agricultural Marketing

Head: Asst. Prof. Piboonrat Rakyutidham, LL.B., RU

Barrister

Staff:

Asst. Prof. Suporn Ketvaraporn,

B.A. (Education), CMU

Asst. Prof. Chamnong Yavichai,

B.Ed. (History), Sri Nakharinwirot U.

Asst. Prof. Sureeporn Jantaraprapavech, B.A. (Economics), TU

M.A. (Business Management), U. of Queensland

Mr. Sirikiat Raschusanti,

B.B.A. (Money and Banking), RU

M.A. (Banking and Finance), CU

Mrs. Pattama Sitdhichai,

B.A., (Hons.), Political Sec., KU

M.A. (Public Administration), NIDA

Mrs. Walapa Limsakul, B.A., Secretarial, Payap Univ.

Agricultural Business

Curricula (for	two	academic	years)
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Structure (minimum requirements)	no. of credits	070
I. Basic Requirements	12	15.19
II. Related Courses	17	21.51
III. Major Courses	34	43.05
IV. Electives	12	15.19
V. Special Problems	2	2.53
VI. Practical Training	_2	
Total	<u>80</u>	100.00

Field of Study: Agricultural Business Administration

AB 430 Apply Agricultural Marketing

I. Basic Requ	irements	no. of credits	no. of hours/week
(minimu	m requirement = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 0
GE 303	Thai Government and Social		
	Development	3	2 - 2
GE 304	Principles of Statistics	3	3 - 0
GE 320	Physical Education	1	0 - 2
AB 411	Human Relationships and Personal	3	3 - 0
•	Management		
II. Related C	ourses		
GE 302	Technical English 6	2	2 - 1
EC 311	Micro Economics	3	3 - 0
EC 312	Macro Economics	3	3 - 0
AB 300	Introduction to Business	3	3 - 0
AB 301	Principle of Business Management	3	3 - 0
AB 330	Principle of Marketing	3	3 - 0
III. Major Co	ourses		
(minimu	m requirement = 34 credits)		
AB 302	Office Management	3	2 - 3
AB 303	Business Statistics	3	3 - 0
AB 320	Business Law 1	3	3 - 0
AB 321	Business Law 2	3	3 - 0
AB 340	Principles of Accounting 1	3	2 - 2
AB 341	Principles of Accounting 2	3	2 - 2
AB 400	Agricultural Business Finance	3	3 - 0
AB 401	Agricultural Business Management	3	3 - 0
AB 402	Farm Business	3	2 - 3
AB 403	Business Research	3	2 - 2
AB 411	Agricultural Business Seminar	1	1 - 0

IV. Electives

(minim	um requirement = 12 credits)		
AB 342	2 Co-operative Account System	3	2 - 2
AB 405	Secretary	3	3 - 0
AB 406	Business Communication	3	3 - 0
AB 407	Organizing	3	3 - 0
AB 408	Organization Theary	3	3 - 0
AB 409	Project Management	3	3 - 0
AB 410	Quantitative Analysis	3	3 - 0
AB 415	Production Management	3	3 - 0
AB 420	Law of Agriculture	3	3 - 0
AB 421	Law of Taxtion	3	3 - 0
AB 422	Law of Cooperatives	2	2 - 0
AB 423	Commercial Banking Law	3	3 - 0
AB 424	Costom Law	3	3 - 0
AB 425	Copy Right, Patent and Trade	3	3 - 0
	Mark Law		
AB 426	Civil and Commorcil Code	3	3 - 0
	Insurance		
AB 427	Labour Law	3	3 - 0
AB 428	Property and Land Law	3	3 - 0
AB 431	Marketing the Main Agricultural	3	3 - 0
	Products of Thailand		
AB 432	Salemanship and Advertising	3	3 - 0
AB 441	Managerial Accounting	.3	3 - 0
. Special P	roblems		
AB 412	Special Problems	2	-
I. Practica	Training		
AB 413	Practical Training	2	

Department of Economics and Agricultural Cooperative

Head: Asst. Prof. Lersont Suwannitya,	B.S. (Agr.), Agr. Econ., KU
The state of the s	B.S. (Agr.), Agr. Coop., KU
	M.A. (Agr. Administration), Araneta U.
	M.S. (Animal Breeding & Nutrition),
	Araneta U.
Assoc. Prof. Yanyong Sitdhichai,	B.S. (Agr.), Agr. Coop., KU
	B.A., Social Welfare, TU
	M.S. (Agricultural Economics), Kansas
	State U.

Cert. in Tnternational Cooperatives.

Cert. in Training Method for Management, UK Asst. Prof. Vichai Tanvatanagul, B.A., Economics, CMU M.A. gri. (Industries) Utah State U. B.S. (Agr.), Agr. Econ., KU B.A., Social Administration, TU M.S. (Farm Management), Michigan State U. Cert. in Research Methodology, EWC Hawaii Mrs. Vanee Saiprasert, B.S. (Agr.), Agr. Econ., KU M.S. (Resource Development), Michigan State U.
M.A. gri. (Industries) Utah State U. Mr. Prayong Saiprasert, B.S. (Agr.), Agr. Econ., KU B.A., Social Administration, TU M.S. (Farm Management), Michigan State U. Cert. in Research Methodology, EWC Hawaii Mrs. Vanee Saiprasert, B.S. (Agr.), Agr. Econ., KU M.S. (Resource Development), Michigan State U.
Mr. Prayong Saiprasert, B.S. (Agr.), Agr. Econ., KU B.A., Social Administration, TU M.S. (Farm Management), Michigan State U. Cert. in Research Methodology, EWC Hawaii Mrs. Vanee Saiprasert, B.S. (Agr.), Agr. Econ., KU M.S. (Resource Development), Michigan State U.
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Mrs. Vanee Saiprasert, B.S. (Agr.), Agr. Econ., KU M.S. (Resource Development), Michigan State U.
Mrs. Vanee Saiprasert, B.S. (Agr.), Agr. Econ., KU M.S. (Resource Development), Michigan State U.
M.S. (Resource Development), Michigan State U.
Miss Jongkolnee Promkutkeo, B.Ec., Dip. of Ag. Ec.,
M.Ec., Ag. Ec., New England U. of New England
Dip. in Rural Policy and Project Planning,
The Hague.
Mr. Buncha Trivithayacun, B.A., Econ., TU
M.A. (Econ. English Program), TU
Mr. Narong Sroytong, B.S. (Agri.), KU
M.S. (Agr. Econ.), KU
Mr. Vichien Vanchainavin, B.S. (Agr.), Agr. Econ., KU
M.S. (Agr. Econ.), UPLB

Economics and Agricultural Cooperatives Curricula (for two academic years)

Structure (minimum requirements)	no. of credits	070
I. Basic Requirements	10	12.50
II. Related Courses	18	22.50
III. Major Courses	39	48.75
IV. Electives	9	11.25
V. Special Problems	2	2.50
VI. Field Work	2	2.50
Total	80	100.00

Field of Study: Cooperative Economics I. Basic Requirements (minimum requirement = 10 credits) GE 301 Technical English 5 GE 302 Technical English 6 GE 303 Thai Government and Social no. of credits no. of hours/week (lecture-lab.) 2 2-0 2-1

Development 3 3 - 0
GE 311 Statistics I 3 3 - 0

II. Related Courses (minimum requirement = 18 credits) AB 306 Business Law 3 3 - 0 AB 409 Principles of Business Management 3 3 - 0 EC 311 Micro Economics 3 3 - 0 EC 312 Macro Economics 3 3 - 0 EC 404 Principles of Land Reform 3 3 - 0 FM 412 Farm Machinery 3 2 - 3 III. Major Courses no.of credits no.of hours/week (minimum requirements = 39 credits) (lecture-lab.) AB 310 Agricultural Marketing 3 2 - 2 AB 340 Principles of Accounting 1 3 2 - 2 AB 411 Human Relations and Personnel 3 3 - 0 Management AB 413 Agricultural Business Finance 3 3 - 0 AB 419 Law of Cooperatives 2 2 - 0 GE 312 Principles of Statistics II 2 2 - 0 EC 302 Principles of Practies of Cooperatives 3 3 - 0 EC 303 Cooperatives Organization and Operation 3 3 - 0 EC 304 Co-operatives Account System 3 2 - 3 EC 318 Government Policy and Role of 2 2-0 Cooperatives EC 403 Farm Management Practices 3 2-3 EC 419 Cooperatives Education and Extension 3 3 - 0 EC 423 Seminar 1 1 - 0 IV. Electives (minimum requirement = 9 credits) GE 414 Research Methodology in Social 3 3 - 0 Science EC 410 Computer Programming 3 3 - 0 EC 414 Cooperative Morement in Selecting 3 3 - 0 Countries EC 415 Cooperative Management 3 3 - 0 EC 416 Co-operative Marketing 3 3 - 0 EC 417 Co-operative Finance and Banking 3 3 - 0 System EC 418 Various Types of Cooperatives 3 3 - 0 EC 420 International Economics 3 3 - 0 EC 421 Agricultural Product Prices 3 3 - 0 EC 422 Co-operatives Organization for 3 3 - 0 Supply and Services AB 421 Law of Taxtion 3 3 - 0

3

3 - 0

AB 424 Money and Banking

V. Special Problems

EC 510 Special Problems

2

VI. Field Work

EC 498 Field Work

2

Department of General Education

The Department of General Education has been inculded in the Faculty of Agricultural Business since the establishment of the Institute in 1975. It serves to provide a broad basis to prepare students for higher education in various fields: social science, mathematics, science, agroindustry, and physical education. Thus, students receive an integrated study program, one which consists of training for a specific occupation and a more basic instruction to enhance their personal development.

Head: Mr. Charal Chareonpakdhi

B.Ed. (General Science), CU

Cert. Production of Temperate and Semi-Temperate

Vegetables, Philippines

Cert. in Potato Production, Philippines

Academic Staff:

Asst. Prof. Sutin Huayrerai,

B.S. (Agr.), KU

M.S. (Vocational Agriculture),

Oklahoma State U.

Asst. Prof. Naruemol Patanukom, B.A. (English), CMU

M.A. (Teaching English), Kansas U.

Mrs. Chongchit Vorayos,

B.S. (Agr.), Agr. Ed., KU

Miss Napaporn Meckhayai,

B.A. (Teaching English), CMU

Assoc. Prof. Boontham Tesna,

B.S. (Agr.), KU

M.S. (Agr. Ed.), Oklahoma state U.

Ph.D. (Cooperative Extension), U. of Wisconsin

Asst. Prof. Prasonk Pishettapun,

B.Ed. (Thai), Sri Nakharinwirot U.

Asst. Prof. Puengporn Niumsup,

B.S. (Mathematics), CMU

Asst. Prof. Nit Sakunnarak,

B.S. (Agr.), Agrinomy, KU

M.S. (Agronomy), KU

Asst. Prof. Anothai Komsawet,

B.S. (Agr.), Microbiology, KU

M.S. (Microbiology and Biology), KU

Miss Aew Ton, B.S., Plant Science, KKU

M.S. (Genetics), KU

Asst. Prof. Preecha Sirisaard,

B.Ed. (Biology) Sri Nakharinwirot U.

Asst. Prof. Nalinee Linpisal,

B.A. (Biology) Mt. St. Mary's College USA.

Mrs. Penrut Hongvitayakom,

M.S. (Genetics) KU

B.Ed. (Biology), Sri Nakharinwirote U.

M.S. (Zoology), CU

Mrs. Anong Hirunburana,

B.S. (Agr.), Hons., Soil Science, KU

M.S. (Food Science), U. of Hawaii

M.S. (Public Health), U. of Hawaii

Mr. Thong-in Hinkum,
Asst. Prof. Charas Gayai,
Mr. Sittisin Bovonsombut,
B.S. (Nutrition & Public Health), Mahidol U.
B.S. (Education), CMU
M.S. (Applied Statistics), NIDA
B.S. (Food Science and Technology), KU
M.S. (Microbiology), KU

Asst. Prof. Chanya Apichattrakul, M.S. (Education), Indiana U.

Mrs. Sirinya Bhackdee, B.A. (Chemistry), Chiangmai Techer's Colloge

Department of Agricultural Extension

Head: Assoc. Prof. Thep Phongparnich, B.S.A. (Agronomy) CLSU

M.S. (Vegetable Crops) Mississippi State U.

D.Ed. (Agricultural Extension)

Oklahoma State U.

Academic Staff:

Mr. Numchai Thanupon, M.S. (Agriculture) Mississippi State U.

Mr. Boonsom Waraegsiri, B.S. (Agr.), Agr. Ed., KU

M.Ed. (Education Extension) UPLB

Agricultural Extension Curricula (for two academic years)

Structure (minimum requirements)	no. of credits	070
I. Basic Requirements	10	13.16
II. Related Courses	12	15.79
III. Major Courses	31	40.79
IV. Minor Courses	15	19.74
V. Electives	6	7.89
VI. Special Problems or Practical Training	_2	2.63
Total	<u>76</u>	100.00

Field of Study: Agricultural Extension

I. Basic Requ	irements	no. of credits	no. of hours/week
(minium	requirements = 10 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 1
GE 302	Technical English 6	2	2 -1
GE 303	Thai Government and Social		
	Development	3	2 - 2
GE 304	Principles of Statistics	3	3 - 0
GE 310	Physical Education	0	0 - 2

II.	Related C	ourses	no.of credits	no.of hours/week
	(minimu	m requirements = 12 credits)		(lecture-lab.)
	GE 310	Economic Growth in Agriculture	3	3 - 0
	AB 310	Agricultural Marketing	3	3 - 0
	AB 306	Business Law	3	3 - 0
	FM 412	Farm Machinery	3	2 - 3
Ш	. Major Co	ourses	no.of credits	no.of hours/week
	(minimu	m requirements = 31 credits)		(lecture-lab.)
	AE 301	Principles of Agricultural Extension	3	3 - 0
	AE 302	Principles of Learning and Teaching	2	2 - 0
	AE 303	Mass Communication	3	3 - 0
	AE 305	Administration in Agricultural	2	2 - 0
		Extension Program		
	AE 401	Rural Development	3	3 - 0
	AE 402	Organization and Operation of Farm	2	2 - 0
		Institutes		
	AE 403	Program Planning and Evaluation	2	2 - 0
	AE 414	Research Methodology	3	3 - 0
	AE 499	Seminar	1	10
	GE 403	Farm Management Practices	3	2 - 3
	AB 407	Agricultural Law	3	3 - 0
	AB 411	Human Relation and Personnel	3	3 - 0
		Management		

IV. Minor Courses

(minimun requirements = 15 credits)

Students have to select only one major in Agricultural Production or Agricultural Business. For example, students like to elect vegetable crop production as minor courses, they have to study in this field at least 15 credits as recommended by advisors.

V. Elective Courses

(minimum requirements = 16 credits)

Students may take any courses in consent with his/her advisors and the head of Department.

Moreover, students can take the following courses as elective courses.

		no. of credits	no. of hours/week. (lecture-lab.)
AE 304	Public Relations and writting for Agricultural Extension	3	3 - 0
AE 306	Integrated Agricultural Extension	3	3 - 0
AE 307	Plant and Animal Judging	1	0 - 2
AE 404	Youth organization and Leadership	3	3 - 0
	Development		

AE 405	Home Industry	3 .	2 - 2
AE 500	Selected Topics	3	3 - 0
	(Approved by advisor)		

VI.	Student 7	Training or Special Problem	no.of credits	no.of hours/week
	(minimu	m requirements = 2 credits)		(lecture-lab.)
	AE 498	Student Training/Special Problems	2	

Footnote: Students who have received an associate degree in vocational technical agriculture or in Agricultural Teacher Training have to complete at least 75 credits to earn Bachelor Degree in Agricultural Technology (B. Ag. Tech.)

Department of Agricultural Industry

Head: Asst. Prof. Chamnong Yavichai, Academic Staff:	B.Ed. (History) Sri Nakarinwirot U.
Mrs. Anong Hirunburana,	B.S., (Hons.) (Soil Science) KU
	M.S. (Food Science) U. of Hawaii
	M.S. (Public Health) U. of Hawaii
Miss Sintana Sukanta,	M.S. (Food Science and Technology) Mississippi
	State U.
Mrs. Pranee Warasawas,	M.S. (Food Science and Technology) Mississippi
	State U.

Agricultural Industry

Curricula (for two academic years)

Structure (minimum requirements)	no. of credits	0/0
I. Basic Requirements	12	15.78
II. Related Courses	18	23.69
III. Major Courses	34	44.76
IV. Electives	6	7.89
V. Special Problems	3	3.94
VI Practical Training	2	2.63
VII Seminar	1	1.31
Total	76	100.00

Field of Study: Food Technology and Industry

I. Basic Requ	irements	no. of credits	no. of hours/week
(minimu	m requirement = 12 credits)		(lecture-lab.)
GE 301	Technical English 5	2	2 - 1
GE 303	Thai Government and Social		
	Development	3	3 - 0

	GE 304	Principles of Statistics	3	3 - 0
	GE 320	Physical Education	1	0 - 2
	AB 411	Human Relationships and Personel	3	3 - 0
		Management		
II.	Related Courses		no.of credits	no.of hours/week
	(minimu	im requirement = 18 credits)		(lecture-lab.)
	GE 314	Introduction to Mathematics	3	3 - 0
	GE 309	General Microbiology	3	2 - 3
	GE 302	Technical English 6	2	2 - 1
	GE 313	Fundamental Biochemistry	3	2 - 3
	AB 310	Agricultural Marketing	3	3 - 0
	AB 415	Production Management	3	3 - 0
	EC 305	Economics and Agricultural	1	1 - 0
		Technology Development		
III.	Major Courses		no.of credits	no.of hours/week
	(minimum requirement = 34 credits)			(lecture-lab.)
	AI 301	Introduction to Food Technology and Industry	. 3	3 - 0
	AI 302	Food Preseroation and Processing	3	2 - 3
	AI 303	Basic Food Engineering	3	2 - 3
	AI 304	Food Microbiology	3	2 - 3
	AI 401	Quality Control of Food Products	3	2 - 3
	AI 402	Meat Technology	3	2 - 3
	AI 403	Cereal Products Technology	3	2 - 3
	AI 404	Food Additives	2	2 - 0
	AI 405	Food Chemistry	3	2 - 3
	AI 406	processing of Fruit and Vegetables	3	2 - 3
	AI 407	Dairy Products Technology	3	2 - 3
	AI 408	Food Legistation and Standardization	2	2 - 0
IV.	Electives	Courses	no.of credits	no.of hours/week
(minimu		m requirement = 6 credits)		(lecture-lab.)
	AI 409	Agricultural Process Engineering 1	3	2 - 3
	AI 410	Agricultural Peocess Engineering 2	3	2 - 3
	AI 411	Principles of New Food Product	3	3 - 0
		Development		
	AI 412	Food Packging	3	2 - 3
	AI 413	Food Acceptance	3	2 - 3
	AI 414	Tea and Coffee Technology	3	2 - 3
	AI 415	Sugar Production Technology	3	2 - 3
	AI 416	Food Safety	3	3 - 0
	AI 417	Human Nutrition and Food Service	3	2 - 3
	AI 418	Industrial Microbiology	3	2 - 3

	AI 419	Poultry Products Technology	3	2 - 3
	AI 420	Fishery Products Technology	3	2 - 3
V. Sp	. Special Problems			
	AI 497	Practical Training	2	
	AI 498	Seminar	1	1 - 0
	AI 499	Special Problem	3	

THE OFFICE OF AGRICULTURAL RESEARCH AND EXTENSION

The Office of Agricultural Research and Extension takes the responsibility of fullfilling the Institute's objectives, aside from instruction, to undergo research studies on agricultural problems encountured to the rural areas, to contribute modern technology to the farmers in cooperation with other government agencies, and to offer education and training courses to the community.

Director: Dr. Thongchai Thonguthaisri,

Deputy Director: Asst. Prof. Phandach Puranapun

Department of Approved Plant and Animal Stock Multiplication

Head: Mr. Dhamkerng Ponkpan, B. Agr. Tech., MIAT

Staff:

Mr. Sirichai Unsrisong, B.S. (Agriculture) KU
Dr. Thongchai Tonguthaisri, B.S. (Agriculture) KU

M.S. (Plant Breeding) U. of Wale

Ph.D. (plant Breeding) Michigan State U.

Department of Training

Head: Asst. Prof. Praphant Osataphant, B.S. (Agriculture) CMU

M.S. (Plant Pathology) KU

Staff:

Asst. Prof. Pheungboon Indageha, B.A. (Education) Sri Nakharinwirot U.

Mr. Niramit Kitroongruang, B.S. (Agriculture) CMU

M.S. (Agriculture Extension) Iowa State U.

Department of Agricultural Research

Head: Asst. Prof. Suthut Siri, B.S. (Agriculture) CMU

M.S. (Animal Production) KU

Staff:

Mr. Sakon Kaicom, B.S. (Animal Husbanohy) KU

M.S. (Animal Science) KU

Miss Somjit Boonsukjai, B.S. (Statistics) KU

M.S. (Statistics) North Carolina State U.

Assoc. Prof. Apichai Ratanawaraha, B.S. (Agriculture) KU

Asst. Prof. Luckana Phetpradap.

B.S. (Horticulture) KU
M.S. (Horticulture) KU
Mrs. Nopmanee Torboonnanon,
B.S. (Agriculture) KU
M.S. (Agriculture) KU

Department of Agricultural Extension

Head: Asst. Prof. Sumeth Sirinirund, B.S. (Agriculture) KU Staff:

Mr. Channarong Doungsa-ard, B.S. (Plant Protection) CMU

M.S. (Entomology) KU

Mr. Wittaya Damrongkiattisak, B.S. (Agricultural) KU

M.S. (Agricultural) KU

Mrs. Radjada Saitrakhosar, B.S. (Agriculture) CMU

M.S. (Animal Production) KU

Department of Higland Agricultural Development & Speical Projects

Head: Asst. Prof. Phandach Puranapun, B.S. (Field Crops) KU
Ph.D. (Crop Production) U. of Reading

Staff:

Mr. Suwat Tantivong,
Mr. Somboon Gladgleb,
Mr. Pon Panworn,
B. Agr. Tech., MIAT
B. Agr. Tech., MIAT

Mr. Prasit Kabchan, Cert. in Vocatinal Agriculture

Department of Business Administration and Agricultural Marketing

AB 306 BUSINESS LAW: 3 credits (3 hrs. lecture), sources and nature of Law, rule of Law, legal classifications, general trend in legal development, general principles of Law, the Laws of Persons; things; rights; Juristic Acts; contracts; obligations; specific contract including contracts of sale; exchange; gitf; hire of properity; hire-purchase; hire of services; hire of work; carriage; loan; deposit; suretyship; mortgage; pledge; warehousing; agency; brokerage; current account; bills; partnerships and companies.

AB 310 AGRICULTURAL MARKETING:

3 credits (3 hrs. lecture), study of the demand and supply of agricultural products, function and trends of marketing, capital and margin, seasonal change of prices, prediction and prospecting future price, production technology and technological change affecting the marketing, flexibility in the demand of agricultural products, law of substitution, cooperation among producers to cope with the problem of marketing, solving the problem of marketing by sale cooperatives.

AB 401 AGRICULTURAL BUSINESS
MANAGEMENT: 3 credits (3 hrs. lecture), importance and philosophy of management, organization and administration of business institution decentralization of control, division of labor, budgeting, and objection of problems and provision of means to solve those problems, provision for flexibility and ways and means for improvement.

AB 405 SECRETARY: 3 credits (2 hrs. lecture, 3 hrs. lab.), planning for communication, filing, recording, reference;

developing skills in the use of office equipments, ability to draft letters and other business documents.

AB 301 PRINCIPLES OF BUSINESS
MANAGEMENT: 3 credits (3 hrs.
lecture), management thought, function
of manager planning, organizing, staffing,
directing, and controlling decision making
management problem and influences
of environment of business management.

AB 411 HUMAN RELATIONS AND PERSONNEL MANAGEMENT:

3 credits (3 hrs. lecture), importance and scope of human relation, basic human need in family and social life, individual uniqueness, device for surveying matters relating to human relation, personnel organization, motivation and morale, fitting individual to his work.

AB 410 QUANTITATIVE ANALYSIS: 3 credits (3 hrs. lecture), analyze the data and information employing statistical-mathetical methods.

AB 400 AGRICULTURAL BUSINESS FINANCE: 3 credits (3 hrs. lecture), functions of finance, capital, resource accumulation, financial planning and analysis including decision making, interest distribution, finance in the company.

AB 408 ORGANIZATION THEORY:

3 credits (3 hrs. lecture) principles of organization to effectively function for specific enterprises, line of authority and job description in the organization, internal and external social interaction, problems and obstacles in day to day functioning of different organization.

AB 431 MARKETING THE MAIN
AGRICULTURAL PRODUCTS
OF THAILAND: 3 credits (3 hrs. lecture), institution, systems and channels for agricultural marketing, specific marketing practice and system for rice, corn, sorghum, tobacco, fishery products, cattle products, vegetable, ornamental plants, etc.; problems of processing and other post-harvest works, improvement of environmental factors conducive to the facilitation of the marketing.

AB 432 SALESMANSHIP AND AD-VERTISING: 3 credits (3 hrs. lecture), history of business in plant protection chemicals, animal disease chemical, agricultural tools, and equipment; channels and practices of communication and principle of advertising; selection of means and ways and equipment for communication and advertising, socioeconomic environment determining methods of advertising, evaluation of advertising.

AB 342 COOPERATIVES ACCOUNT-ING SYSTEM: 3 credits (2 hrs. lecture, 2 hrs. lab.), study on accounting system for agricultural cooperatives, thrift and credit cooperatives, consumer's cooperatives; useful accounting for these cooperatives, financial statement and internal control of each type of cooperatives, financial plan and evaluation.

AB 422 LAW OF COOPERATIVES:
prereq. Business Law, 2 credits (2 hrs.
lecture), Land Code, Cooperative Societies Act, Land Consolidation for
Agriculture Act, Land Reform for
Agriculture Act, Paddy Field Rent
Control Act, Aid Fund for Farmers Act,

Royal Decree on Marketing Organization for Famrers, Plant Quarantine Act, Poisonous Substances Act, Fertilizer Act.

AB 421 LAW OF TAXATION: prereq.

Business Law, 3 credits (3 hrs. lecture),
study of taxation policy, principles of
income tax, characteristics of good tax
system, various aspects of taxation,
principles and methods of tax collection
under the Revenue Code, personal income
tax, corporate income tax, business tax
and stamp duty, and state revenue.

AB 424 MONEY AND BANKING: prereq.

Principles of Economics, 3 credits (3 hrs. lecture), the history and characteristics of money, the role of money in economic system, the theory of money, the system of commercial bank and other financial institutions and their roles, the roles of Central Bank and its operation, the monetary and fiscal policies, international money exchange, the relationship between the amount of money and economic activity.

AB 340 PRINCIPLES OF ACCOUNT-ING I: 3 credits (2 hrs. lecture 2hrs. lab.) posting and recording business transactions in the jurnal, ledger and other book; asset liability and capital in the balance sheet; single and double entries.

AB 341 PRINCIPLES OF ACCOUNT-ING II: preq. Principles of Accounting I, 3 credits, (2 hrs. lecture 2 hrs. lab.), cash and investment, petty cash and inprest system, bank reconcilliation statement, valuation of assets and liabilities, partnership and company, analysis of financial statements and accounting for a manufacturing concer.

Department of Agricultural Economics Cooperatives

EC 301 PRINCIPLES OF ECONOMICS:
3 Credit (3 hrs. lecture), Pre: None
General principles and theories in
economics; economic concepts essential
for Thailand economic development;
elementary theories of production,
distribution, exchange and consumption.

PRINCIPLES AND PRACTICES
OF COOPERATIVES: 3 Credits
(3 hrs. lecture) Pre: None, Philosophy,
objectives of cooperatives, and international cooperative principles; characteristics of cooperatives as compared to
other types of business; history of cooperative movement, origin of cooperatives,
types of cooperatives, structure of
cooperatives and cooperative management; cooperative movement in Thailand;
factors for cooperative accomplishment;
cooperative and economic and social
development.

EC 303 COOPERATIVE ORGANIZA-TION AND OPERATION: 3 Credits (3 hrs. lecture) Pre: Econ 302, Guidelines for establishment of various types of cooperatives, cooperative objectives, members, capital, enterprise, management, stages of various cooperative establishment procedure, problems, obstacles as well as possible solutions are studied.

EC 304 COOPERATIVE ACCOUNTING
SYSTEM: 3 Credits (2 hrs. lecture, 2 hrs. lab.), Pre: AB 301, Advanced accounting records; detailed classification of assets and liabilities; the accounting of business share members and cooperative members including the preparation of

financial statements; accounting systems of agricultural cooperatives, and thrift and saving, cooperatives, particularly book keepings, records and documents which are different from those of general business; procedures and methods for preparing financial statements, and cooperative financial control and appraisal.

EC 310 ECONOMIC EVOLUTION IN AGRICULTURE: 3 Credits (3 hrs. lecture) Pre: None, Elementary economics and agricultural economics; the efficient use of factors of production; population and economic evolution; the role of capital in agriculture; the role of technology in agricultural development; the marketing of agricultural products; principles of production; principles of profit maximization; principles of market price determination; agricultural business management; the world's and Thailand's agricultural situations; principles of solving agricultural problems, and setting up agricultural policies; problems of resource development; the domestic and the international trades of agricultural products; the relationship between agricultural production, business and industrial production.

EC 311 MICROECONOMICS: 3 Credit
(3 hrs. lecture) Pre: None, Consumer
behaviour, demand, supply, market
prices, price elasticities, classical utility
and consumer demand, indifferent curve
analysis and modern utility theory; theory
of the firm, firm and its decisions;
theory of production, choices of inputs
and outputs, costs of production.

EC 312 MACROECONOMICS: 3 Credits (3 hrs. lecture) Pre: Econ. 311 or Econ.

301, Consumption, saving, investment; national income concepts, the roles of the multiplier and the accelerator; aggregate supply and aggregate demand; monetary policy, fiscal policy; causes of inflation and deflation, the analysis of the effects of inflation and deflation; international trade, balance of trade, balance of payments; the basic of economic growth.

EC 317 COOPERATIVES: 3 Cretids (3 hrs. lecture) Pre: None, Structure of cooperatives; principles and procedures of the setting up of cooperatives in Thailand; planning, organization, co-ordination, control and appraisal, and financial management of the Cooperative Federation; cooperatives and economic and social development in Thailand; the accomplishment, the obstacles and the failure of various types of cooperatives in Thailand.

EC 318 GOVERNMENT POLICIES AND ROLES TOWARDS COO-

PERATIVES: 3 Credits (3 hrs. lecture) Pre: Econ. 302 or Econ. 317, The relationship between public and cooperatives, the government authorities and roles on cooperative development; government's policies and administrative structure in controlling and promoting cooperatives; cooperative laws; cooperafive administration in Thailand as compared to other countries; roles of the Department of Cooperative Promotion, and the Department of Cooperative Auditing; the success and the obstacles of cooperative movement in solving economic problems of poor people in rural and urban areas.

EC 401 THAILAND'S AGRICULTURAL ECONOMICS: 3 Credits (3 hrs. lecture) Pre: ECON. 301 or ECON. 311, Concepts of Agricultural economics; the relationship between agriculture and non-agriculture; the use of factors of agricultural production; the economic principles adaptable to production; land economics, agricultural finance and credits; population's food consumption; agricultural business; the international trade of agricultural commodities; agricultural policies and agricultural economic problems.

EC 402 ECONOMY OF THAILAND:

3 Credits (3 hrs. lecture) Pre: ECON. 311 and ECON. 312 or ECON. 301, Economic structure of Thailand in the past and the present; the role of agriculture on the economy of Thailand; the use of natural resources in important agricultural activities; the roles and the structures of industry and commerce; balance of trade, balance of payments; the role of the public sector in Thai economy; financial institutions; economic and social problems of different parts in Thailand.

EC 403 FARM MANAGEMENT PRAC-

TICES: 3 Credits (2 hrs. lecture, 2 hrs. lab.) Pre: None, Nature and situation of farming in Thailand; application of economic principles and theories to farming practice, and farm price appraisal; farm accounting; production rates of crops and animals; work efficiency evaluation and analysis of farm production; excursions to different types of farms recommended.

EC 404 PRINCIPLE OF LAND RE-FORM: 3 Credits (3 hrs. lecture) Pre: ECON. 301 or ECON. 311, Definition, objectives, principles and procedures of land reform; land reform for agricultural purposes in Thailand; principles of land management; land consolidation such as cooperative farm and other types adopted in Asian countries as compared to Thailand.

EC 405 THAI ECONOMIC DEVELOP-MENT: 3 Credits (3 hrs. lecture) Pre: ECON. 301 or ECON. 312, Essential condition for economic development of developing countries; measurement of economic growth; problems possibly incurred from the planning and the operation at various stages of Thailand's economic development.

EC 406 PRODUCER COOPERATIVES AND CONSUMER COOPERA-

TIVES: 3 Credits (3 hrs. lecture) Pre: ECON. 302 or ECON. 317, Meaning and objectives of producer cooperatives, and consumer cooperatives; principles, organization and structure of agricultural cooperatives, manufacturing cooperatives, and consumer cooperatives; business institutions connecting with producer cooperatives, and consumer cooperatives; factors contributed to and problems associated with the accomplishment of Thai cooperatives.

EC 408 AGRICULTURAL PROBLEMS
AND POLICES: 3 Credits (3 hrs. lecture) Pre: None, Thai agricultural situation; meaning of agricultural policies; objectives of policy preparation, government policies for the improvement of Thai farmers' standard of living; evaluation of Thai government projects

designed to assist farmers in the past and the present as well as the suggestions for future improvement; the agricultural administration of the Ministry of Agriculture and Co-operatives, and other ministries concerned.

EC 409 AGRICULTURAL RESOURCES

DEVELOPMENT AND CONSERVATION: 3 Credits (3 hrs. lecture) Pre: None, History of the conervation and development of agricultural resources, types and forms adopted for the conservation and development of agricultural resources in Thailand; application of projects as means of resource conservation and development; principles and methods of project planning; analysis and evaluation of costs and benefits of agricultural resource conservation and development.

EC 410 COMPUTER PROGRAMMING: 3 Credits (3 hrs. lecture) Pre: None, Types and working functions of computer; media applied to communicate with computer machines; programme writing and testing; the use of computer programmes emphasized on FORTRAN and BASIC languages, the use of packaged programmes.

EC 411 AGRICULTURAL PRODUCTION ECONOMICS: 3 Credits
(3 hrs. lecture) Pre: ECON. 301 or
ECON. 311, Production economic
theory; factor-product, factor-factor,
and product-product relationships;
estimation of response functions, and
constrained optimization; revire of
marginality principle; theory of costs;
economic of size; some issues in aggregative production.

EC 412 AGRICULTURAL DEVELOP-MENT AND WORLD ECONO-

MY: 3 Credits (3 hrs. lecture) Pre: None, World agricultural and food problems at present; the role of agriculture in economic development; relationship between domestic and international agricultural marketing and farming system as well as economic development

EC 413 LAW OF COOPERATIVES:
2 Credits (2 hrs. lecture) Pre: AB. 306,
Land Act, Cooperative Act, Land
Consolidation Act, Land Reform Act
and other Acts related to Law of Cooperatives.

EC 414 COOPERATIVE MOVEMENT
IN SELECTED COUNTRIES:
3 Credits (3 hrs. lecture) Pre: None,
Various types of cooperatives in selected
countries are compared, and to be
selected for adaptation in Thailand.

EC 415 COOPERATIVE MANAGEMENT: 3 Credits (3 hrs. lecture) Pre
: AB. 409, Defining cooperative society's objectives, and manager's strategies in planning, organizing, leadership, control of finance, expenditure, budget, personnel, cooperative teaching and training, co-ordinating; manager's special responsibility in relation to committees, cooperative members and outsiders; the services provided by the Department of Co-operative Promotion and the cooperative League of Thailand.

EC 416 COOPERATIVE MARKETING: 3 Credits (3 hrs. lecture) Pre: AB. 310, Elementary marketing, and essential organizations in functioning purchase, sale, transportation, storage, grading standardization of important agricultural products; cooperatives function marketing, particularly agricultural cooperatives; cooperative financial sources in Thailand; problems of technical, organization, price flucuation, market competition and market information currently faced by Thai cooperatives.

EC 417 COOPERATIVE FINANCE AND BANKING SYSTEMS: 3 Credits (3) hrs. lecture) Pre: ECON. 302, Agricultural credit and its function in the economy, importance of agricultural credit in Thai economy; government policies and operational strategies for short, medium and long-term credits; expenditure associated with the credit operation; sources of credits for farmers such as Bank of Agriculture and Agricultural Cooperatives, commercial banks, and government funds; comparison of the importance of financial resources, credit loan procedures through agricultural cooperative societies, farmers groups, and farmers; methods to follow up the use and the repayment of credit

EC 418 VARIOUS TYPES OF COO-OPERATIVES: 3 Credits (3 hrs. lecture) Pre: ECON. 302 or ECON. 317, Philosophy, history, types, objectives, principles, activities as well as evolution of different cooperatives such as agricultural, land settement, thrift and saving, shop, and fisheries cooperatives.

loans by farmers.

EC 419 COOPERATIVE EDUCATION AND TRAINING: 3 Credits (3 hrs. lecture) Pre: ECON. 302 or ECON. 317, Principles and methods of cooperative education and training provided to members, managers, and personnels of cooperatives, and to any interested groups or persons in order to promote

and diffuse cooperatives; cooperative members' professional promotion.

- EC 420 INTERNATIONAL ECONOMICS: 3 Credits (3 hrs. lecture) Pre:
 ECON. 311 and ECON. 312 or ECON.
 301, International trade theories, government policies to control imports and exports; international trade and economic development; balance of trade and balance of international payment solvings; international investment, financial institutions, and economic corporation.
- PRICES: 3 Credits (3 hrs. lecture)
 Pre: ECON. 301 or ECON. 311, Demand
 and supply of agricultural products,
 factors effecting the changes of supply
 and demand, elasticities of supply and
 demand; agricultural product price
 determination and movement; government
 policies and measures adopted for
 agricultural price stabilization.
- EC 422 COOPERATIVE ORGANIZATION FOR SUPPLY AND SERVICES: 3 Credits (3 hrs. lecture) Pre
 : ECON. 302 or ECON. 317, Cooperative
 organization of the supply of production
 inputs including financial capital, storage,
 transportation, technical assistance to
 farmers at appropriate time and quantity
 in order to achieve maximum accomplishment in both economic and social
 aspects.
- EC 423 SEMINAR: 1 Credits (1 hr/week)

 Pre: None, Seminar topic must be related to cooperatives.
- EC 424 TRAINING ON COOPERA-TIVES: Pre: ECON. 304, Training on cooperatives is compulsory for all students for a period of 200 hours.

Department of General Education

- GE 301 TECHNICAL ENGLISH 5: 2 credits (2 hrs. lecture, 1 hr. lab), practice in listening, speaking, reading alound, silent reading and writing; skills which are concerned with basic agriculture.
- GE 302 TECHNICAL ENGLISH 6: prereq.

 Technical English 5, 2 credits (2 hrs. lecture, 1 hr. lab), more difficult practice in the four skills further; practice in reading numbers, temperatures, tables, graphs, etc.
- GE 303 THAI GOVERNMENT AND SOCIAL DEVELOPMENT: 3 credits (2 hrs. lecture, 2 hrs.lab), structure and function of formal and informal institutions, both rural and urban, affecting agricultural extension and rural development; Government of Thailand, the merit of the government system with constitutional monarchy.
- GE 304 PRINCIPLES OF STATISTICS:

 3 credits (3 hrs.lecture), basic mathematics
 and statistics, definitions, data presentations, frequency distribution, measures
 of central tendency, measures of dispersion, binomial distribution, normal
 distribution, sampling distribution,
 estimation, test of significance, correlation and analysis of simple regression,
 analysis of variance.
- GE 306 APPLIED PLANT PHYSIO-LOGY: 3 credits (2 hrs.lecture, 3 hrs.lab), chemical and physical activities of plants: absorption, evaporation, nutrient and moisture allocation, transformation of carbohydrate, fat, protein and other nutrients, photosynthesis and growth of plants.

- GE 308 GENETICS: 3 credits (2 hrs.lecture, 3 hrs.lab), genetic characteristics and their transmission; gene and gene function; chromosomes as vehicles of inheritance; changes in genetic material and consequences.
- GE 309 GENERAL MICROBIOLOGY:
 3 credits (2 hrs.lecture, 3 hrs.lab),
 morphology, physiology, propagation
 and growth, microbiological taxonomy,
 media culture, isolation and dyeing,
 inoculation and immunization.
- GE 311 STATISTICS I: 3 credits (3 hrs.lecture), basic knowledge in mathematics, definitions, statistical usage in business and economics, data collection, data presentations, uses of tables and charts, frequency distribution, measures of central tendency, measures of dispersion, theory of probability, probabilities and decision-making, test of hypothesis, sampling techniques.
- GE 312 STATISITCS II: prereq. Statistics I, 3 credits (3 hrs.lecture), measurement and prediction of variation in business, analysis of time series, analysis of trends, seasonal variation, cyclical flucturations and irregular variation, correlation and analysis of simple regression, correlation and analysis of multiple regression.
- GE 314 INTRODUCTION TO MATHE-MATICS: 3 credits (3 hrs. lecture), uses of tables and charts, trigonometry function, basic algebra, area and volume calculation, general physics.
- Department of Agricultural Extension
- AE 301 PRINCIPLES OF AGRICUL-TURAL EXTENSION: 3 credit hours (lecture only), History, principles

- and purposes of agricultural extension, philosophy, work, problems and resolution of agricultural extension system in Thailand.
- AE 302 PRINCIPLES OF LEARNING
 AND TEACHING: 2 credit hours
 (lecture only), Principles, purposes,
 and theories of learning; teaching methods
 and techniques.
- AE 303 MASS COMMUNICATION: 3 credit hours (lecture only), Principles, purposes, methods and supervision, utilization of mass media equipments, simple audiovisual material for teaching and learning.
- AE 304 PUBLIC RELATIONS AND
 WRITING FOR AGRICULTURAL EXTENSION: 3 credit hours
 (lecture only), Principles, methods,
 processes, and utilization of public
 relations and writting applicable for
 agricultural extension work to the farmers
 and the public.
- AE 305 ADMINISTRATION IN AGRI-CULTURAL EXTENSION PRO-GRAM: 3 credit hours (lecture only), Principles, theories, administrative methods, and problem analysis of hierachical structure in agricultural extension work, personnel, and administrative factors for effective operation.
- AE 306 INTEGRATED AGRICULTU-RAL EXTENSION: 3 credit hours (lecture only), Principles, Purposes, and methods of agricultural extension in Thailand; integration of special methods, operation cooperation, coordination and framework of agricultural extension.

- AE 307 PLANT AND ANIMAL JUDG-ING: 2 credit hours (lecture only), Principles, purposes, operation, and procedures for animal and plant contest and grading.
- AE 401 RURAL DEVELOPMENT: 3 credit hours (lecture only), Principles and methods for rural development to alleviate standard of living in rural areas, application of principles of development to the rural community.
- AE 402 ORGANIZATION AND OPERATION OF FARMER INSTITUTES: 3 credit hours (lecture only),
 Structure of farmer institutes, types of
 farmer cooperatives, principles and
 methods for organizing and planning,
 socio-economics relationship, success,
 obstacles, and failure of certain organizational structures.
- AE 403 PROGRAM PLANNING AND EVALUATION: 2 credit hours (lecture only), Factors involved in program planning and evaluation, problems and resolution in implementation of agricultural extrension projects and evaluation of agricultural extension projects.
- AE 404 YOUTH ORGANIZATION
 AND LEADERSHIP DEVELOPMENT: 3 credit hours (lecture only),
 Theories, principles, types, and conditions
 of leadership in every aspects of youth
 development in local level, application
 of leadership to self and community,
 group dynamics, group decisions, and
 group processes.
- AE 405 HOME INDUSTRY: 3 credit hours (2 hr. lecture, 3 hr. lab.), Industrial

arts, labor utilization in household, and utilization of agricultural waste for home industry.

- AE 414 RESEARCH METHODOLOGY:
 3 credit hours (lecture only), Application
 of mathematical and statistical knowledge
 for statistical planning, analysis, reporting
 and interpretation of research result
 related to agricultural extension.
- AE 498 STUDENT TRAINING/SPE-CIAL PROBLEMS: 2 credit hours (lecture only), Practicum for no less than 200 hours and special problem, or no less than 300 hour practicum, or special problem alone will be scheduled by the department of agricultural extension. Practicum or special problem alone need to be approved by the advisor and the department head prior to implementation.
- AE 499 SEMINAR: 1 credit hour, Discussion and report of progress or up-to-date information on agricultural and extension education applicable to the professional. The student need to prepare topic for discussion and present to the seminar at least once/semester upon approval by the instructor or delegate.
- AE 500 SELECTED TOPIC: 3 credit hours, for selected self interested topic decided by the instructor and student. Available only for the graduating student.

Department of Agricultural Industry

AI 301 INTRODUCTION TO FOOD
TECHNOLOGY AND INDUSTRY: 3 Credits (3 hrs. lecture),
Prerequisite-None, World food situation.
Physiological, biochemical and Physical
causes damage of foods. Methods that

use for reducee deterioration of raw materials after harvesting. Storage, preservation and processing of food products.

- AI 302 FOOD PRESERVATION AND PROCESSING: 3 Credits (2 hrs. lecture, 3 hrs. lab.) Prerequisite-None, Studying the objects of food preservation. Food classification on basis of composition, structure and nutritional value. Studying the basic principles of food preservation method such as high temperature method, low temperature method, dehydration, fermentation and etc.
- AI 303 BASIC FOOD ENGINEERING:
 3 Credits (2 hrs. lecture, 3 hrs. lab.)
 Prerequisite-None, Basic knowledge of
 the measurement in engineering such
 as measure of heat, pressure, velocity,
 flow rate of liquid. Equipments use in
 the industry. Heat transfer.
- AI 304 FOOD MICROBIOLOGY: 3
 Credits (2 hrs. lecture, 3 hrs. lab.)
 Prerequisite-GE. 309 General Microbiology, The role of microorganisms in food.
 Food microorganisms which are contaminants from nature. The effert of food preservation to microorganisms. Food spoilage; microorganisms in fermented food; food borne pathogens. Sanitation, control and examining of food by using microbiological methods.
- AI 401 QUALITY CONTROL OF FOOD
 PRODUCTS: 3 Credits (2 hrs. lecture,
 3 hrs. lab.), Prerequisite AI.304 Food
 Microbiology, Principles, methods
 and techniques in quality control of
 food products. The quality control
 of raw materials, quality control during
 food production. Microbiological,

chemical and physical quality control and food products standardization.

- AI 402 MEAT TECHNOLOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Studying the meat structure and composition and how this information is applied to meat processing industry. Nature of meat hazards. Studying methods of retail and wholesale marketing of meat and meat products.
- AI 403 CEREAL PRODUCTS TECH-NOLOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.) Prerequisite AI.301-Introduction to Food Technology and Industry, Property of cereal and cereal products. Cereal products processing and storage.
- AI 404 FOOD ADDITIVES: 2 Credits
 (2 hrs. lecture), Prerequisite GE.313
 Fundamental Biochemistry, The kind
 of additives that use in food industry.
 Property of additives that effert to food
 in the way of chemistry, physic, biology
 and preservation throughout the consumer.
- AI 405 FOOD CHEMISTRY: 3 Credits (2 hrs. lecture, 3 hrs. lab.) Prerequisite GE.313 Fundamental Biochemistry, Chemical and physical property of food coposition. Different ways of food analysis. Changing of chemical and physical property of food after harvesting, during processing and storage.
- AI 406 PROCESSING OF FRUIT AND VEGETABLE: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Studying structure and composition of fruit and vegetable, and how this information is applied to fruit and vegetable processing industry. Nature of fruit and vegetable hazards, Studying

methods of retail and wholesale marketing of fruit and vegetable products.

- AI 407 DAIRY PRODUCTS TECHNO-LOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Milk industry in Thailand. The effect of factors to the quantity and quality of milk. Chemical composition of milk and methods of analysis. Pasteurization and sterilization of milk. Cream separation and homogenization. Products from milk. Nutritive value of milk and milk products. Packaging and transportation of milk and milk products for consumer.
- AI 408 FOOD LEGISLATION AND
 STANDARDIZATION: 2 Credits
 (2 hrs. lecture) Prerequisite-None,
 International and Thailand food legislation. Law food of Thailand Health
 Ministry. Quality control of food under
 the legislation.
- AI 409 AGRICULTURAL PROCESS
 ENGINEERING 1: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-AI.303
 Basic food Engineering, Studying principle of fans, pumps and their using. The separation of size and kind of agricultural products, using equipments for separation. Drying and dryer of agricultural raw materials.
- AI 410 AGRICULTURAL PROCESS
 ENGINEERING 2: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-AI.303
 Basic Food Engineering, Studying principle of cooling and heating for keeping agricultural products. Studying method of operation the equipments for transfering raw materials. Planing the industrial plant lay-out.

AI 411 PRINCIPLES OF NEW FOOD PRODUCT DEVELOPMENT: 3 Credits (3 hrs. lecture), PrerequisiteNone, The trend of new food product development; that can be done by using

None, The trend of new food product development; that can be done by using natural resource, technology and economic growth. Studying new food production method in laboratory. Acceptability test and evaluation of new food products in order to develop new food products.

- AI 412 FOOD PACKAGING: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Studying food packages. Physical physico-chemical properties and attractive of food packages. The kind of material in packages. Test material in packages. Studying the methods for packaging food in order to keep food products. Food packaging equipments and legislations of food packages.
- AI 413 FOOD ACCEPTANCE: 3 Credits (2 hrs. lecture, 3 hrs. lab.) Prerequisite-None, The responsibility of human to colour, odor, taste, shape and texture of food. Acceptability test for consumer which effect to each kind of food product.
- AI 414 TEA AND COFFEE TECHNO-LOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Tea leave products. Chemistry of tea leaves. Processing and equipment of tea leave products production. Tea commercial plant lay-out and management. Harvesting of coffee seeds.
- AI 415 SUGAR PRODUCTION TECH-NOLOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-AI.302 Food Preservation and Processing, The importance of sugar in daily life and

role of sugar in food industries. Technology for production of sugar in sugar industries. By products from sugar production.

- AI 416 FOOD SAFETY: 3 Credits (3 hrs. lecture), Prerequisite-GE.309 General Microbiology, The causes of unsafety food for consumption. Prevention and keeping of food from pathogens and toxic substances by using principle of food sanitation, waste materials treatment from food industrial plants.
- AI 417 HUMAN NUTRITION AND FOOD SERVICE: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, The kind of food substances. Consumption and problems of mal-nutrition. Principle of food service and management for communities in order to develop human nutrition.
- AI 418 INDUSTRIAL MICROBIOLO-GY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-GE.309 General Microbiology, The role of microorganisms in industry. The production of alcohols, organic acids, bio-gases, proteins, vitamins, enzymes, entibiotics and vaccines by using microorganisms. Waste water treatment from industrial plant by using microorganisms.
- AI 419 POULTRY PRODUCTS TECH-NOLOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Studying the modern poultry processing equipment, grading, killing, dressing, evisceration and packaging poultry. General principles of poultry preservation. Studying the structure and composition of egg and how this information is applied to egg preservation. Studying methods of retail and wholesale marketing of poultry

and egg products.

- AI 420 FISHERY PRODUCTS TECH-NOLOGY: 3 Credits (2 hrs. lecture, 3 hrs. lab.), Prerequisite-None, Typical of aquatic animals used for food. Chemical and physical property of aquatic animals. Causes of deterioration, preservation, processing and packaging of economic aquatic animals. Quality control and products standardization.
- AI 497 FIELD WORK: 2 Credits, Field work is emphasized in practical in food plants and factories not less than 200 hours.
- AI 498 SPECIAL PROBLEMS: 3 Credits,
 Students will study by doing experiments
 or collecting data concern about food
 technology and industry or problems in
 food industry. Then making report under
 suggestion of adviser and permission
 from head of department.
- AI 499 SEMINAR: 1 Credit (1 hrs. presentation), Senior student only, Preparation and presentation of specially assigned problems in food technology and industry.

COURSE DESCRIPTION

Department of Plant Technology

- PT 330 FARM CROP PRODUCTION:
 3 credits (2 hrs. lecture, 3 hr. lab.) environmental conditions conductive to the growth of important local field crops; multiple cropping system; growing in medium size land.
- PT 341 INTRODUCTION TO POMO-LOGY: 3 credits (2 hr. lecture, 3 hr. lab.), fruit production factors, methods for orchard improvement, budding,

grafting, supporting; cultivation, classification of pomological products and related business.

- PT 351 ORNAMENTAL PLANTS AND IDENTIFICATION: 2 credits (1 hr. lecture, 3 hrs. lab.), ornamental horticulture as a career; preview of nursery, florist and landscape industries; taxonomy and identification; habits of growth; cultural requirements of different groups of plants: tree, palm, shrubs, bush, vine, cover crop, and leafy ornamental plants; at least one field trip to commercial sites is recommended; practices in landscaping of various types.
- PT 352 PLANT MATERIALS & PLANT IDENTIFICATION: 2 credits (1 hr. lecture, 3 hr. lab.), botanical description; growth and development; habitat; cultivation and husbandry; methods of utilization; nutritive value; classification of fruit; and plant collection.
- PT 361 PLANT JUDGING: 2 credits (1 hr. lecture, 3 hr. lab.), plant contest; judging principles and criteria for judging, plant preparation for contest; necessary equipments and procedures for judgement.
- PT 420 PLANT PESTS AND THEIR CONTROL: 3 credits (2 hrs. lecture, 3 hrs. lab.), taxonomy of plant pests, prevention and eradication of plant pests and other enemies of economic crops of Thailand; the practices of spraying, dusting, fumigation, poisoning, sanitation, biological and cultural control with emphasis on field practices.
- PT 421 CROP DISEASES AND THEIR CONTROL: 3 credits (2 hrs. lecture, 3 hrs. lab.), important diseases to these crops: corn, rice, maize, tobacco, soybean,

groundnut, cotton, cassva etc., both of pathogens and non-parasites with emphasis on diagnosis of important symtoms; safety measures in handling chemicals.

- PT 422 WEEDS AND THEIR CONTROL: 3 credits (2 hrs. lecture, 3 hrs. lab.), taxonomy, propagation and ecology of weeds; control by cultivation practices, biological and chemical means; emphasis on prevention.
- PT 432 FARM CROP IMPROVEMENT:
 prereq. Genetics, 3 credits (2 hrs. lecture,
 3 hrs. lab.), basic and advanced techniques
 in crop improvement: selection, hybridization; benefits of hybrid vigor, field
 practices especially in field crop and
 horticultural crop breeding.
- PT 433 SEED TECHNOLOGY: prereq.
 Economic Crops, 3 credits (2 hrs. lecture,
 3 hrs. lab.), seed purity and other needed
 quality; physiological changes; age and
 vigor of seed; germination tests and
 quality control; technology of cleaning
 and preserving seeds to maintain highest
 quality.
- PT 434 INDUSTRIAL CROPS I: prereq.
 Farm Crop Production, 3 credits (2 hrs. lecture, 3 hrs. lab.), economic importance, improvement, production, marketing and product processing of industrial crops: cereals, sugarcane, cassava, pineapple, etc.
- PT 435 INDUSTRIAL CROPS II: prereq. Farm Crop Production, 3 credits (2 hrs. lecture, 3 hrs. lab.), economic importance, improvement, production, marketing and product processing of industrial crops, fibre crops, tobacco.

- PT 436 PASTURE AND FORAGE CROPS: prereq. Economic Crops, 3 credits (2 hrs. lecture, 3 hrs. lab.), principle of pasture improvement in Thailand: selection and cultural practice in hay making, silage, etc.; increasing nutritional value of hay and silage; nutritional analysis and quality judging of forage crops and products.
- PT 442 DRY LAND FARMING: prereq.
 Applied Soil Science, Economic Crops,
 3 credits (2 hrs. lecture, 3 hrs. lab.),
 selection of crops suited for dry land
 or dry season; the effects of dryness
 and wind erosion; change of dry land soil
 moisture; special characteristics of the
 plant that can grow on dry land; optimum
 moisture needs and other specific physiological characteristics of the plant;
 farm practices for dry land farming.
- PT 448 EXPERIMENTAL TECHNIQUES
 AND ANALYSIS: prereq. Principles
 of Statistics, 3 credits (2 hrs. lecture,
 3 hrs. lab.), techniques in randomized
 design, randomized complete block
 design, latin square, analysis of variance,
 experimental plot lay-outs, confounding
 and split plot methodology, calculation
 for missing value, incomplete block
 design.
- PT 451 ORNAMENTAL PLANT DI-SEASES: 3 credit (2 hrs. lecture, 3 hrs. lab.) a detailed study of diseases and pests of ornamental plants, their effect on plants, their prevention and control.
- PT 453 LANDSCAPE PLANNING AND DESIGN: prereq. Ornamental Plants and Identication, 3 credits (2 hrs. lecture, 3 hrs. lab.), principles of landscape designs, the practice of following the principles and the planned design.

- PT 454 TURF MANAGEMENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), practice in the maintenance of turf areas such as athletic fields, park lawns, golf greens and others.
- PT 455 ABORICULTURE: prereq. Ornamental Plants and Identification, 3 credits (2 hrs. lecture, 3 hrs. lab.), the care and management of large ornamental trees, cavity-work bracing, cabling and pruning; practices in climbing and working on trees with different implements tools.
- PT 456 POT PLANT PRODUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab.), the production of major commercial potted plants under glass and lath, selection and preparation of pots and media, planting, propagation and necessary care, preparation for marketing.
- PT 457 COMMERCIAL FLOWER PRO-DUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab.), important commercial cut flower varieties, the production of cut flowers in the field, under cloth, and under glass; planting, propagation and necessary care, preparation of cut flowers for market.
- PT 458 ORNAMENTAL PLANT JUD-GING: prereq. Ornamental Plants and Identification, 3 credits (2 hrs. lecture, 3 hrs. lab.), procedure and practice in score card grading of cut flowers, pot plants, orchids and other ornamental plants; preparation of plants for contest judging practices.
- PT 459 FLOWER FORCING: 3 credits (2 hrs. lecture, 3 hrs. lab.) technologies of forcing and controlling commercial plants flowering, the variation of light

intensity, temperature, topping hormoning, fertilizing, etc.

- PT 460 RETAIL NURSERY MANAGE-MENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), wite selection, practice in displaying and caring of fresh flower and ornamental plants; techniques in advertising and packing; a study tour to flower retailing shops is recommended.
- PT 462 PLANT HORMONES: 3 credits (2 hrs. lecture, 3 hrs. lab.), definition, importance, role of hormones in plants, emphasis on technologies in the gainful use of the hormone especially those obtained from plants and photosynthesis.
- PT 470 VEGETABLE CROP PRODUCTION AND PROCESSING: 4
 credits (2 hrs. lecture, 6 hrs. lecture),
 study on environmental conditions suitable
 for plant growth and development;
 commercial crop production; emphasis
 on varieties of vegetable crops, planting
 date, preparation of the land, management,
 environmental control to give products
 which meet commercial standards and
 factory demands; sample collection,
 quality test, harvesting schedule, yield
 estimation and harvest weight per day
 or per week, crop processing; excursions
 to crop farms and local factories.
- PT 471 HARVESTING, PACKAGING AND MARKETING OF VEGE-TABLE CROPS: prereq. Vegetable Crop Production and Processing, 4 credits (3 hrs. lecture, 3 hrs. lab), procedure in harvesting, storage and packaging techniques; grading and quality selection; contests and judging of vegetable crops; students actually engaged in procedure up to distribution to consumers.

PT 472 ENVIRONMENTAL CONTROL IN HORTICULTURAL CROPS: prereq. Applied Plant Physiology, 3 credits (2 hrs. lecture, 3 hrs. lab), ecological and physiological factors affecting growth, flowering, fruitsetting., as related to photoperiodism; arboriculture; environmental adjustments and media to increase yield and its quality; designing plant nurscrics and other

PT 473 VEGETABLE CROP MANAGE-MENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), organization, management and operational procedures on vegetable crop farms for commercial purpose; labor problem in cultivation and harvets; distribution and transportation to markets; excursions to vegetable crop farms.

equipment and facilities.

- PT 474 VEGETABLE CROP IMPROVE-MENT AND SEED PRODUC-TION: prereq. Genetics, 3 credits (2 hrs. lecture, 3 hrs. lab.), general and modern techniques in plant breeding; selection and hybridization, and the application of hybrid vigor; techniques in seed production of economically important crops.
- PT 480 HARVESTING PACKING AND MARKETING OF FRUIT CROPS: 3 credits (2 hrs. lecture, 3 hrs. lab.), Preq. GE 306, stages and methods for harvesting, packaging techniques, container, post-harvest storage, grading, handling, and marketing.
- PT 481 FRUIT CROP PROCESSING: 3 credits (1 hrs. lecture, 3 hrs. lab.), Preq. GE 306, Raw material sampling and quality control, scheduling of harvesting,

processing, and methods of preservation.

- PT 482 ORCHARD MANAGEMENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), Style of orchard management, Cropping and irrigation system, Techniques for chemical application, problems and resolution in orchard management.
- PT 490 PHYSIOLOGY OF FRUIT CROPS: 3 credits (2 hrs. lecture, 3 hrs. lab.), Preq. GE 306, Effect of light, temperature, water, nutrients, natural and synthetic plant hormones on growth and development, flowering, fruit initiation, taste and fruit complex.
- PT 491 APICULTURE: 3 credits (2 hrs. lecture, 3 hrs. lab.), History of apiculture, types and advantages of bees, apiculture to increase yield of orchard, husbandry and harvesting of products.
- PT 493 AGRO-FORESTRY: 3 credits (2 hrs. lecture, 3 hrs. lab.), Planning for inter-cropping system of economic crop and plant to preserve natural equlibrium and natural water resource.
- PT 498 SPECIAL PROBLEMS: 5 credits students consult their own advisor and the department head in selecting the topic; study on a selected small research problem or a specialized farm practice contributive to his own career after graduation.
- PT 499 SEMINAR: 1 credit discussion on recent problems and how to solve them; introduction and practice of new techniques; each student is to give one presentation to the class; mandatory for those finishing last semester.
- PT 511 FARM PRACTICES I AND II, PT 512: practices in farm crop pro-

duction, especially field crops, to acquire basic skills in land preparation, planting, plant protection, harvesting, marketing, with emphasis on skill in handling farm equipment; outside sites with advanced techniques not available on the campus be used as a training station.

- PT 513 SPECIAL FIELD CROP · I TOBACCO I: 2 credits (1 hr. lecture,
 3 hrs. lab.), tobacco seed bed management,
 selection of appropriate sites, sterilization
 by fumigation or other methods, general
 care of young seedlings.
- PT 514 SPECIAL FIELD CROP II TOBACCO II: 3 credits (2 hrs.
 lecture, 3 hrs. lab.), field plot preparation,
 transplanting, pests and diseases control,
 harvesting practices, grading fresh
 leaves, labor management.
- PT 515 SPECIAL FIELD CROP III TOBACCO III: 3 credits (2 hrs. lecture, 3 hrs. lab.), tobacco processing and management, curing plant management, construction of curing bin, management of fuel material, equipments and practice in moisture and temperature control, grading of cured leaves, bailing.

REMARK: The three courses in tobacco available are sequential, the earlier one is the prerequisite of the one followed. Thailand has ample number of tobacco industrial sites; it is essential as a part of the instruction to study specific types of tobacco industries such as taking an excursion study of burley tobacco to Sukhothai, and study and on campus practices. It is a requirement of each tobacco student to have a minimum of 30 days of field practice in tobacco industry either in any government curing center or accredited private tobacco industrialists.

- PT 521 TROPICAL FRUIT CROPS:
 3 credits (2 hrs. lecture, 3 hrs. lab.),
 Botanical description, origin, distribution
 and adaptation, propagation, husbandry,
 cultivation, harvesting, handling, packaging, and marketing of tropical fruits.
- PT 522 SUB-TROPICAL FRUIT CROPS:
 3 credits (2 hrs. lecture, 3 hrs. lab.),
 Botanical description, origin, distribution
 and adaptation, propagation, husbandry,
 cultivation harvesting, handling, packaging,
 and marketing of temperate and subtropical
 fruit crops.
- PT 531 PLANTATION OF INDUSTRIAL CROPS: 3 credits (2 hrs. lecture, 3 hrs. lab.), Botanical description, origin, distribution and adaptation, economic importance, propagation, husbandry, cultivation, harvesting, processing, and important industrial crop in Thailand.
- PT 552 SPECIAL HORTICULTURAL CROP I (ORCHID PRODUCTION TECHNOLOGY I): 3 credits (2 hrs. lecture, 3 hrs. lab.), technologies in propagation, flower production and packing for market.
- PT 553 SPECIAL HORTICULTURAL
 CROP II (ORCHID PRODUCTION TECHNOLOGY II): prereq.
 Special Horticultural Crop. I, 3 credits
 (2 hrs. lecture, 3 hrs. lab.), orchid improvement through selection and breeding,
 producing new hybrids for market, orchid
 business management.
- PT 554 SPECIAL HORTICULTURAL
 CROPS III (ADVANCED ORCHID TECHNOLOGY): prereq.
 Special Horticultural Crop II, 3 credits
 (2 hrs. lecture, 3 hrs. lab.), advanced

techniques in orchid propagation, mutation, seed technology.

Department of Animal Technology

AT 310 INTRODUCTION TO ANIMAL SCIENCE: 2 credits (2 hrs. lecture), General background of livestock development. Principles and technical terms of animal breeding, anatomy and physiology, production and reproduction, artificial insemination, nutrition, diseases and parasites and behavior.

AT 311 ANIMAL REPRODUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab.), Anatomy and physiology of reproductive system. Hormones regulation in reproduction. Estrous, ovulation, breeding, pregnancy and parturition of farm animals. Fertility and factors affecting fertility.

- AT 312 ANATOMY AND PHYSIOLOGY

 OF FARM ANIMALS: 3 credits
 (2 hrs. lecture, 3 hrs. lab.), structure and
 composition of tissues, classification
 of bones according to shapes and functions, muscular system, circulatory system,
 digestive system, reproductive and
 respiratory system, physiology of cattle,
 swine and poultry, kidney and its functions,
 function of muscle, nerve system and
 ductless glands.
- AT 315 PRINCIPLES OF AQUACUL-TURE: 3 credits (2 hrs. lecture, 3 hrs. lab.), History of aquaculture and present situation in Thailand, general principles of aquaculture, soil, fertilizer and food for animal feed, popular aquatic organism, water analysis, field trip included.
- AT 320 POULTRY FARM MANAGE-MENT: 4 credits (2 hrs. lecture, 6 hrs.

lab.), organization and management of commercial poultry operation, new technologies in poultry production and business, poultry marketing, field trip to creditable commercial poultry farm.

- AT 330 DAIRY FARM MANAGEMENT:

 prereq. Dairy Production, 4 credits
 (2 hrs. lecture, 6 hrs. lab.), organization
 and management of commercial dairy
 operation, new technologies in dairy
 production and business, housing and
 equipments, herd management, herd
 and farm records, etc.
- AT 331 BEEF CATTLE FARM MANAGE-MENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), Various systems of managing beef farm. Building and equipments. Herd management, calf rearing; heifers, cows and sires management. Breeding and record and beef marketing.
- AT 332 SWINE FARM MANAGEMENT:

 3 credits (2 hrs. lecture, 3 hrs. lab.),
 organization and management of commercial swine operation, new technologies
 in swine production and business, housing
 and equipments, herd management,
 herd and farm records.
- AT 351 FISH CULTURE: 3 credits (2 hrs. lecture, 3 hrs. lab.), Evolution of aquaculture; Dosiable properties of fish pond, fish feed and feeding, procedures for feeding, nursery, and mettiplication; fish enemics and parasites, and transportation of yomy fish.
- AT 411 APPLIED ANIMAL NUTRI-TION: 3 credits (2 hrs. lecture, 3 hrs. lab), metabolism of nutrients and recent nutritional development; nutrient requirements of farm animals; an advanced

study of the principles of animal nutrition and their application to the production of farm animals, including the study of physiology of nutrition.

- AT 412 ARTIFICIAL INSEMINATION:
 3 credits (2 hrs.lecture, 3 hrs.lab),
 technologies in artificial insemination
 emphasizing field practice skills after
 thoroughly understanding theoretical
 framework of reproductive system.
- AT 413 ANIMAL GROWTH: 3 credits (2 hrs.lecture, 2 hrs. assigned reading and reports), animal embryology, prenatal and postnatal growth, the course of growth of the body as a whole, the physiology of growth and effects of genetics, factors governing growth, nutrient requirements for growth, etc.
- AT 420 POULTRY NUTRITION: 3 credits
 (2 hrs.lecture, 3 hrs.lab), principles of
 poultry nutrition; energy, protein, carbohydrate; fat, mineral, and vitamin
 requirements for maintenance, growth,
 and for protection; digestion and absorption
 of carbohydrates, fats, and amino acids;
 formulated rations for specific purposes
 and commercial feed mill practices.
- AT 421 INCUBATION AND HATCHERY MANAGEMENT: 3 credits (1 hr. lecture, 6 hrs.lab), poultry embryology, principles and management of egg storage, incubation, chick sexing, young chick nursing.
- AT 423 POULTRY BREEDING: prereq.

 Genetics, 3 credits (2 hrs.lecture, 3 hrs.
 lab), inheritance of traits of economic
 importance; records of performance,
 methods of selection, and systems of
 breeding for genetic improvement of
 poultry, techniques to improve poultry

quality to suit the market demand; practices in modern breeding techniques.

- AT 424 POULTRY PRODUCTS TECH-NOLOGY: 5 credits (3 hrs.lecture, 6 hrs.lab), issues between the producer and consumer of poultry products and eggs; storage technology to preserve the quality; grading, cleaning, and packing; product processing, for instance, canning and smoking.
- AT 425 POULTRY DISEASES AND SANITATION: 3 credits (2 hrs. lecture, 3 hrs.lab), important diseases and parasites of poultry; symtoms, diagnosis, and prevention; identification and sanitation management of diseases and parasites.
- AT 426 POULTRY HOUSING AND EQUIPMENT: 3 credits (2 hrs.lecture, 3 hrs.lab), poultry farm lay-outs with emphasis on motion and time, general sanitation, light and temperature requirement.
- AT 428 POULTRY FEED CROPS: 3 credits (2 hrs. lecture, 3 hrs. lab), functions and importance of poultry feed crops; the ability to use grass and legume of the poultry; use of cereals and by-products for poultry feed; toxin in forage crops and poisonous plants in the field; use of supplements and other products in poultry feed.
- AT 444 POULTRY JUDGING: 2 credits (1 hr. lecture, 3 hrs. lab), principles of poultry judging of various types; meat, egg or dual purpose and fancy; preparation of poultry for contest; practice and participation in the poultry contest are essential.

- AT 451 AVIAN PHYSIOLOGY: 3 credits (2 hrs. lecture, 3 hrs. lab), basic selection of the poultry; physiology of blood circulation, respiration, digestive system, metabolism, excretion, reproductive system, nerve system, hormones and glands, etc.
- AT 460 MEAT INSPECTION: 2 credits (1 hr. lecture, 3 hrs. lab), Various parts of animal carcass, quality evaluation and grading of meat. Chemical composition of meat.
- AT 461 DAIRY FEED AND FEEDING:
 prereq. Animal Nutrition, 3 credits
 (2 hrs. lecture, 3 hrs. lab), anatomy and
 functions of digestive tract, nutrients
 and their metabolism, feeds for dairy
 cattle, feed evaluation, nutrient requirements and calculation of nutrient requirements for a ration, etc.
- AT 462 FORAGE CROPS AND RANGE MANAGEMENT: 4 credits (2 hrs. lecture, 6 hrs. lab), basic science of legumes and grass; their adaptation, production, establishment, utilization, and management in pastures.
- AT 463 MEAT AND MEAT PRODUCTS:

 3 credits (2 hrs. lecture, 3 hrs. lab),
 physical and chemical composition of
 meat; preparations for slaughter-safety
 and sanitation; slaughtering, processing,
 identification, and utilization of meat
 and meat products.
- AT 464 DAIRY SCIENCE LABORA-TORY: 1 credits (3 hrs. lab), analysis of milk and milk products.
- AT 465 DAIRY CATTLE JUDGING: prereq. Dairy Production, 1 credits

(3 hrs. lab), breeds and breed associations; conformation and scoring; preparation of dairy cattle for contest, practice and participation in dairy cattle contest are essential.

- AT 466 LACTATION: prereq. Anatomy and physiology of Farm Animals, 2 credits (1 hr. lecture, 3 hrs. lab), anatomy and physiology of mammary glands, biosynthesis of milk, factors governmig milk secretion, etc.
- AT 467 DAIRY CATTLE IMPROVE-MENT: prereq. Genetics, 3 credits (2 hrs. lecture, 2 hrs. lab), genes-their function and role in dairy cattle genetics; variation in economic traits in dairy cattle; systems of breeding and selection in dairy cattle.
- AT 468 DAIRY DISEASES AND SANI-TATION: prereq. General Microbiology, Anatomy and Physiology of Farm Animals, 3 credits (2 hrs. lecture, 3 hrs. lab), important diseases and parasites of dairy cattle; symtoms, diagnosis and prevention; identification and sanitation of diseases and parasites.
- AT 469 MILK AND MILK PRODUCTS: prereq. General Microbiology, 4 credits (2 hrs. lecture, 6 hrs. lab), the constituents of milk, factors influencing the composition of milk, microorganisms, the manufacture of dairy product, the production of quality of milk, and miscellaneous tests, etc.
- AT 470 MILK PLANT MANAGEMENT: prereq. Milk and Milk Products, 3 credits (2 hrs. lecture, 3 hrs. lab), lay-out and planning to establish milk plant, equipments and general consideration in milk plant management.

- AT 471 DAIRY COOPERATIVES AND MARKETING: 3 credits (1 hr. lecture, 6 hrs. lab), structure and role of cooperatives; processing and distribution of milk; milk and milk products marketing; export and import, including business of domestic cooperatives.
- AT 468 DAIRY DISEASES AND SANI-TATION: prereq. General Microbiology, Anatomy and Physiology of Farm Animals, 3 credits (2 hrs. lecture, 3 hrs. lab), important diseases and parasites of dairy cattle; symtoms, diagnosis and prevention; identification and sanitation of diseases and parasites.
- AT 469 MILK AND MILK PRODUCTS: prereq. General Microbiology, 4 credits (2 hrs. lecture, 6 hrs. lab), the constituents of milk, factors influencing the composition of milk, microorganisms, the manufacture of dairy product, the production of quality of milk, and miscellaneous tests, etc.
- AT 470 MILK PLANT MANAGEMENT:

 prereq. Milk and Milk Products, 3 credits
 (2 hrs. lecture, 3 hrs. lab), lay-out and
 planning to establish milk plant, equipments and general consideration in milk
 plant management.
- AT 471 DAIRY COOPERATIVES AND MARKETING: 3 credits (1 hr. lecture, 6 hrs. lab), structure and role of cooperatives; processing and distribution of milk; milk and milk products marketing; export and import, including business of domestic cooperatives.
- AT 472 FEEDLOT: 3 credtis (2 hrs. lecture, 3 hrs. lab.), Feeds and crop residues, type of animals and growth pattern of animal feedlot. lost, profit and marketing of animal feedlot.

- AT 473 ANIMAL BEHAVIOR: 3 credits (2 hrs. lecture, 3 hrs. lab.), Imfluence of hormones and environment to animal behavior, Various types of behavior, and advantages of behavior.
- AT 474 CATTLE AND BUFFALO MAR-KETING: 3 credits (2 hrs. lecture, 3 hrs. lab.), Regional, inside country and other countries marketing. Grading of animals. Analysed and solved problems of meat importing and exporting.
- AT 475 SWINE FEED AND FEEDING:

 prereq. Animal Nutrition, 3 credits (2
 hrs. lecture, 3 hrs. lab.), anatomy
 nutrients and their metabolism, feed for
 swine, feed evaluation, nutrient requirements and calculation of nutrient requirements for rotion.
- AT 476 SWINE DISEASES AND SANI-TATION: prereq. Anatomy and Physiology of Farm Animals, General Microbiology, 3 credits (2 hrs. lecture, 3 hrs. lab.), important diseases and parasites of swine; symtoms, diagnosis and prevention; identification and sanitation of diseases and parasites.
- AT 477 SWINE HOUSING AND EQUIP-MENTS: 3 credits (2 hrs. lecture, 3 hrs. lab.), swine farm lay-outs with emphasis on motion and time, general sanitation, light and temperature requirement.
- AT 478 SWINE JUDGING: 2 credits (1 hr. lecture, 3 hrs. lab.), principles of swine judging of various types; preparation of swine for contest; practice and participation in the swine contest are essential.
- AT 479 SWINE MARKETING: 3 credits (2 hrs. lecture, 3 hrs. lab.), regional,

inside country and other countries marketing; grading of swine; analysis and solve problems of swine; export and import, including business of domestic cooperatives.

- AT 480 EXPERIMENTAL TECHNIQUES
 AND ANALYSIS IN ANIMAL
 RESEARCH: 3 credits (2 hrs. lecture,
 3 hrs. lab.), Principles of experimental
 design: completely randomized design,
 randomized block design, latin square
 design analysis of variance, comparison
 of normal average and ortheogonal,
 factorial design, and analysis of coveriance.
- AT 483 PRINCIPLES OF FISHPOND CONSTRUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab.), Principles and methods for site selection for fishpond construction; survey and mapping, design and construction of fishpond and drain pipe, including equipments for fishculture and other aquatic animals; field trip included.
- AT 484 FISH FARM MANAGEMENT:

 3 credits (2 hrs. lecture, 3 hrs. lab.),
 general conditions for aquatic farm,
 economic theories for management;
 planning, farm administration and
 management, auditing and analysis of
 impacts on income and capital in aquatic
 farming, principle of calculation,
 statistical interpretation, population
 genetics; field trip included.
- AT 485 FISH BREEDING: 3 credits (2 hrs. lecture, 3 hrs. lab.), Genetics evidence and philosophy of fish breedings; principles and procedures for fish breeding and multiplication, management for fish breeding, field trip included.
- AT 486 FISH FEED AND FEEDING:
 3 credits (2 hrs. lecture, 3 hrs. lab.),

Principles of fish feed, energy requirement, protein carbohydrate, fat, minerals, and vitamin for survival, growth, and reproduction of fish; raw material for fish feed and chemical and nutritive evaluation; calculation for fish feed ration, principles and procedures for fish feeding and fish products, field trip included.

- AT 487 FISH DISEASES AND PARA-SITES: 3 credits (2 hrs. lecture, 3 hrs. lab.), Diseases and parasite found in fishes, causes, control and protection, field trip included.
- AT 488 IONTHOLOGY: 3 credits (2 hrs. lecture, 3 hrs. lab.), external and internal appearance of soft and hard-boned fish, physiological and anatomical system of fish, certain behavior patterns and general ecological concepts; brief classification, identification, and analysis of fish taxonomy.
- AT 489 PLANKTONOLOGY: 3 credits (2 hrs. lecture, 3 hrs. lab.), taxonomy of planktons: principles of plankton culture and benefits of planktons to aquatic living things, sampling and laboratory analytical techniques, field trip included.
- AT 490 FISHERY RESOURCES MA-NAGEMENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), study of aquatic ecology, aquatic population, improvement of fishery resources, basic data collection, utillization and management of fishery resources, field trip included.
- AT 492 FISHERY LAW AND REGULA-TIONS: 3 credits (2 hrs. lecture, 3 hrs. lab.), general law, fishery law and regulations,; Law of rightful fishing

in Thai fishery boundary, Law for fishery process business.

- AT 493 COMMERCIAL FISH CUL-TURE: 2 credits (2 hrs. lecture, 3 hrs. lab.), classification of commercial fish, market demand, breeding and multiplication, type of plants used in commercial fish culture, husbandry principles, feeding, grading and packing for distribution, field trip included.
- AT 494 FISHING GEARS: 2 credits (2 hrs. lecture) different types of fishing gears.
- AT 495 FISHERY LITERATURE: 2 credits (2 hrs. lecture) principles of research and collection of fishery literatures.
- AT 496 FISHERY CONSERVATION: 2 credits (2 hrs. lecture) problems of fishery resources, and general principles for conservation.
- AT 497 MANAGEMENT OF AQUATIC PLANTS: 2 credits (2 hrs. lecture) types and description of aquatic plants related to aquaculture, benefits and problems to aquatic animals, controlling principles for aquatic weeds.
- AT 498 SPECIAL PROBLEMS: 5 credits selection of a topic most challenging and beneficial to the student's career with the approval from the Department's Committee; a copy of the report must be filed at the Department for future reference.
- AT 499 SEMINAR: 1 credit the student is assigned to study at least one chosen topic with the staff's consulation; the most up-to-date technology, adaptive technology, technological innovations, economic trend and foreseeable change

are dealt with.

- AT 510 FIELD WORK: 2 credits, the student must complete his 200 hours practicum requirement so that he can apply his experience in his future career. This must be done upon approval from Division Head and Department Head.
- AT 511, 512 FARM PRACTICE I, II: students are assigned to practice in the farm, upon approval of faculty advisor, so that they are familiar with new technology.
- AT 513 SELECTED POULTRY PRO-DUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab), economic importance of poultry production in Thailand; type and breed of poultry, housing, feeds and feeding, breed selection, hatchery operation and operation of incubators, diseases and sanitation of poultry.

Department of Landscaping and Environment Conservation

- LE 301 ECOLOGY AND PRINCIPLES
 OF CONSERVATION: 3 credits
 (2 hr. lecture, 3 hr. lab.), Definition of
 ecology, ecological network and relationship, the cycles and transformations
 of ecosystems, the principles of natural
 resource conservation, such as land,
 water, forest, rangeland, mineral,
 wildlife, human being and etc. Study
 of the relationship between natural
 resources and human society, conservation
 and planning methodology, efficiently
 use of natural resources. Field trip
 required.
- LE 302 LANDSCAPE INVENTORIES: 2 credits (1 hr. lecture, 3 hrs. lab.), Field surveying in landscape, such as inventories

of sources and types of natural landscape and man-made landscape, collection of necessary data for comprehension of project sites. Student must learn the theory and practice of surveying, the use of surveying tools and equipments to do mapping for planning.

- LE 303 FUNDAMENTAL OF DESIGN:
 2 credits (1 hr. lecture, 3 hrs. lab.), The
 analysis and application of elements
 and principles of art and design, expressed
 in two and three dimensions for landscape
 composition or exterior spatial design
 for environmental requirements.
- LE 314 INTRODUCTION TO LAND-SCAPE. ARCHITECTURE: 3 credits (2 hrs. lecture, 3 hrs. lab.), The evolution of landscape architecture and other related arts from the ancient time to modern time and introductory of design principles related to landscape architecture.
- LE 315 GRAPHIC COMMUNICATION:

 2 credits (1 hr. lecture, 3 hrs. lab.), Learn theory and practice of graphic arts, free hand sketching, landscape drawing, working drawing with drafting tools, perspective drawing, symbol design, drawing expressed in two and three dimensions and rendering with various tools.
- LE 316 PLANT ECOLOGY: 3 credits
 (2 hrs. lecture, 3 hrs. lab.), Pre: BOTANY or ORNAMENTAL
 PLANTS, Definition and ecosystem
 of plant ecology, the relationship between
 plants and environmental factors, network
 and transformation of plant community. Field trip required.
- LE 317 LANDSCAPE DESIGN I: 3 credits (2 hrs. lecture, 3 hrs. lab.), Landscape

design and drawing practice, emphasize on pre-planning, site design; paving, planting, including structures and other elements for home landscape and parks. The application of theory and principles of design in creative composition of landscape in terms of aesthetic and functional uses to solve the problems concerning the space between building and its landscape. Field trip required.

- LE 411 PLANTING DESIGN I: 3 credits (2 hrs. lecture, 3 hrs. lab.), Pre: PLANT MATERIALS AND PLANT IDENTIFICATION, Study of planting design principles, plant material report writing, selection of plant materials in landscape design, the drawing of planting plan, details and plant list in design. Emphasis is placed on aesthetic and functional use in small-scale landscape projects such as home landscape. Field trip required.
- LE 412 PLANTING DESIGN II: 3 credits (2 hrs. lecture, 3 hrs. lab.), Pre: PLANTING DESIGN I, Continue to LE 411 PLANTING DESIGN I and emphasis is placed on larger-scale projects. Field trip required.
- LE 413 LANDSCAPE DESIGN II: 3
 credit hours (2 hr. lecture, 3 hr. lab.),
 Pre: LANDSCAPE DESIGN I,
 Continue to LE 317 LANDSCAPE
 DESIGN I and emphasis is placed on
 Larger-scale projects. Field trip.
- LE 414 LANDSCAPE CONSTRUC-TION: 3 credits (2 hrs. lecture, 3 hrs. lab.), Pre: LANDSCAPE DESIGN AND PLANNING or LAND-SCAPE DESIGN II, The design and construction of home landscape, park, shopping center etc., problems of

earthwork, drainage, parking lots, ornamental gardens of various types and additional structures, cost estimation of construction, plant materials use and maintenance, Field trip required. Students should be able to do working drawings of landscape projects and know materials and construction methods as well as detail drawings and site plan of the whole projects (s), specification writing and bidding.

- LE 415 URBAN AND REGIONAL LANDSCAPE DESIGN: 3 credits (2 hrs. lecture, 3 hrs. lab.), The application of urban and regional design as well as landscape design principles in large-scale project planning and development at the urban level such as Central Business District, urban park, cultural center and shopping center including regional level such as natural resource conservation projects, environmental reclamation, national park project etc. Field trip required.
- LE 416 PLANNING AND DESIGN OF RECREATIONAL AREAS: 3 credits (2 hrs. lecture, 3 hrs. lab.), Pre: **ECOLOGY AND PRINCIPLES** OF CONSERVATION or PLANT ECOLOGY or FUNDAMENTAL OF DESIGN, The methodology of planning and design of recreational areas, the efficient utilization of natural resources for social recreational purpose, study on effects of light, micro-climate, topography, vegetation, soil, water, road and community center etc. for planning and design of recreation areas, national parks and urban parks or pen spaces. Field trip required.
- LE 417 MANAGEMENT OF RECREA-TION AREAS: 3 credits (2 hrs. lecture,

3 hrs. lab.), Pre: NATIONAL RE-SOURCES CONSERVATION or ECOLOGY AND PRINCIPLES OR CONSERVATION, management of various recreational resources and service problems from small-scale parks to national parks. Structures and details of service and regulation in controlling public and private recreational areas.

LE 418 ARCHITECTURAL DESIGN:
3 credits (2 hrs. lecture, 3 hrs. lab.), Pre:
INTRODUCTION TO LANDSCAPE ARCHITECTURE,
FUNDAMENTAL OF DESIGN
and GRAPHIC COMMUNICATION, To learn architechtural design
fundamentals, consist of esthetic quality
in physical and functional uses of building,
construction materials and methods,
structural systems and site planning
related to landscape architecture.

LE 419 INTERIOR PLANTING DESIGN
AND MAINTENANCE: 3 credits
(2 hrs. lecture, 3 hrs. lab.), The art of
interior decorating with indoor plants,
design principles, cultivation and maintenance as well as cost estimation. Field
trip required.

LE 499 SEMINAR: 2 credits, Discussion of problems reporting new technique in landscaping, researching and experimenting useful for profession in this field. Each student must prepare a topic for discussion in class at least once. Instructors and all students take part in evaluation. Arranged for last year students only.

LE 511, 512 LANDSCAPE PRACTICE I & II: 2 credits (3 hrs. practice, 2 semesters), Landscape practice program for students in landscape technology major, to be familiar with ornamental garden techniques; cultivation, propagation, nursery management, landscaping, marketing etc. Practice with government and private sectors may be arranged.

Department of Soil and Fertilizers

SF 311 APPLIED SOIL SCIENCE: 4 credits (2 hrs. lecture, 4 hrs. lab.), genesis and classification of soil; soil classification of Thailand; physical, chemical, biological properties of soil; relationship among soil, water and plant; distribution, mobility and function of soil water; types of tropical soil; principle of soil improvement and conservation; soil survey and mapping; agricultural practice of soil in tropical zone.

SF 321 FERTILIZER TECHNOLOGY
AND USE: prereq. Applied Soil
Science, 3 credits (2 hrs. lecture, 3 hrs.
lab.), a study of plant nutrients and
Fertilizer use; relationship between
fertilizer application and increase
plant yield, deficiency symtoms of
each plant nutrients; relationship among
nutrient concentrations in plant which
are controlled by absorption process;
ionic exchanges both internal and
external of plant roots; mobilization of
plant nutrients.

SF 411 SOIL AND WATER MANAGE-MENT: prereq. Applied Soil Science, 3 credits (2 hrs. lecture, 3 hrs. lab.), land preparation for crop; water sources and water need for plants; prevention of soil erosion; irrigation and drainage plaining in the farm; the use and maintenance of tools and equipment for irrigation and drainage.

Department of Farm Machanics

FM 412 FARM MACHINERY: 3 credits (2 hrs. lecture, 3 hrs. lab.), Using reparing, modifying, adapting, farm machinery e.g. cultivators, sowing machines, fertilizing machine, dusting or spraying machine, harvesting machine, etc.

FM 413 FARM ELECTRICITY, WATER SUPPLY AND SANITATION:

3 credits (2 hrs. lecture, 3 hrs. lab.) farm electricity plumbing and sanitation, installation repair and working precautions.

FM 421 FARM IRRIGATION AND

DRAINAGE: 3 credits (2 hrs. lecture, 3 hrs. lab.), Hydrology relating to farm irrigation by ditching, piping, canaling etc, work appraisal of land leveling, water regulation, building, instollment of sprinkling system, underground water movement, surface drainage and flood control by various measures.

FM 431 WOOD AND CONCRETE TECH-

NOLOGY: 3 credits (1 hr. lecture, 6 hrs. lab.) Use and maintenance of tools and equipment, precaution and safety measures, mastering skill and technology facilitating and solving field problem.

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PM 413 FARM ELECTRICAY, WATER SUPPLY AND SAMILATION

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PM 431 WOOD AND CONCRETE TECH

NOLOGY: 3 credits 'I in: lecture, 6 by lab.) Use and maintenance of roots and equipment, prevaintion and safety mastering skill and connology feel and cology feels problem.















