



MIAT

MAEJO INSTITUTE OF AGRICULTURAL
TECHNOLOGY

BULLETIN 1985 - 1986



ห้องสมุด
สถาบันเทคโนโลยีการเกษตรแม่โจ้

MAEJO INSTITUTE OF AGRICULTURAL TECHNOLOGY



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

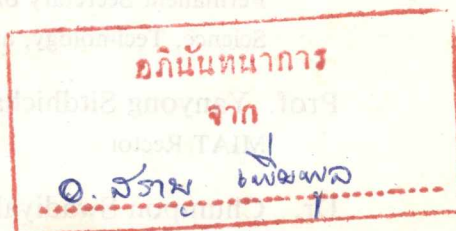
Established in 1934 as a regional Agricultural Teacher Training School by the Ministry of Education, Maejo Institute of Agricultural Technology is one of the oldest agricultural education institutions in Thailand. In 1938, the school became a College of Agriculture under the administration of the Ministry 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



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

| | |
|------------------------------------|---------------|
| 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 | " |
| Dr. Chumpon Sawadiyakorn | " |
| Mr. Panlert Buranansilapin | " |
| Dr. Sukhum Assawet | " |
| 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 |
| Graduate/Post Graduate | | | |

| | |
|---------------|----------|
| Acc. No. | Call No. |
| Date Received | |
| | |

Academic Calender

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

- 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.
- have never been indicted on criminal charges.
- have never exercised ill-conduct.
- 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 relinquish 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.
 2. 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.
- j. 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 curricular, according to their majors.
- l. 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 |
| B | 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 | - |
| S | Satisfactor | - |
| U | Unsatisfactory | - |
| I | Incomplete | - |

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

1. 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.
2. 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.), Entomology, 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 (minimum requirements) | no. of credits | % |
|----------------------------------|----------------|--------|
| I. Basic Requirements | 12 | 15.79 |
| II. Related Courses | 20 | 26.32 |
| III. Major Courses | 33 | 43.42 |
| IV. Electives | 6 | 7.89 |
| V. Special Problems | 3 | 3.95 |
| VI. Field Work | 2 | 2.63 |
| Total | 76 | 100.00 |

Field of Study: Agronomy

| I. Basic Requirements | no. of credits | no. of hours/week (lecture-lab.) |
|---|----------------|-------------------------------------|
| (minimum requirement = 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 Management | 3 | 3 - 0 |

II. Related Courses

| | | |
|--|---|-------|
| (minimum 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 Technology Development | 1 | 1 - 0 |
| 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 Courses

| | | |
|---|---|-------|
| (minimum requirement = 33 credits) | | |
| 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 (lecture-lab.) |
|-----------------------------------|----------------|-------------------------------------|
| (minimum requirement = 6 credits) | | |
| 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 | 2 - 3 |
| PT 462 Plant Hormones | 3 | 2 - 3 |

V. Special Problems

| | | | |
|--------|------------------|---|---|
| PT 510 | Special Problems | 3 | - |
|--------|------------------|---|---|

VI. Field Work

| | | | |
|--------|------------|---|---|
| PT 498 | Field Work | 2 | - |
|--------|------------|---|---|

Field of Study : Ornamental Horticulture

I. Basic Requirements

| | no. of credits | no. of hours/week (lecture-lab.) |
|---|----------------|-------------------------------------|
| (minimum requirement = 12 credits) | | |
| GE 301 Technical English 5 | 2 | 2 - 1 |
| 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 Courses

| | no. of credits | no. of hours/week (lecture-lab.) |
|--|----------------|-------------------------------------|
| (minimum requirement = 17 credits) | | |
| 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 Technology Development | 1 | 1 - 0 |
| 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 Courses

| | no. of credits | no. of hours/week (lecture-lab.) |
|---|----------------|-------------------------------------|
| (minimum requirement = 36 credits) | | |
| PT 351 Ornamental Plants and Identification | 2 | 1 - 3 |

| | | | |
|--------|--------------------------------------|---|-------|
| PT 420 | Plant Pests and Their Control | 3 | 2 - 3 |
| PT 432 | Farm Crop Improvement | 3 | 2 - 3 |
| PT 433 | Seed Technology | 3 | 2 - 3 |
| PT 451 | Ornamental Plant Diseases | 3 | 2 - 3 |
| PT 453 | Landscape Planning and Design | 3 | 2 - 3 |
| PT 457 | Commercial Flower Production | 3 | 2 - 3 |
| PT 459 | Flower Forcing | 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 511 | Farm Practices 2 | 1 | 0 - 3 |
| PT 552 | Special Horticultural Crop-Orchid 1 | 3 | 2 - 3 |
| PT 553 | Special Horticultural Crop-Orchid 2 | 3 | 2 - 3 |

IV. Electives

(minimum requirement = 6 credits)

| | no. of credits | no. of hours/week (lecture-lab.) |
|--|----------------|-------------------------------------|
| PT 422 Weeds and Their Control | 3 | 2 - 3 |
| PT 433 Seed Technology | 3 | 2 - 3 |
| PT 434 Commercial Seed Production and Processing | 3 | 2 - 3 |
| PT 448 Experimental Techniques and Analysis | 3 | 2 - 3 |
| PT 454 Turf Grass Management | 3 | 2 - 3 |
| PT 455 Arboriculture | 3 | 2 - 3 |
| PT 456 Pot Plant Production | 3 | 2 - 3 |
| PT 458 Ornamental Plant Judging | 3 | 2 - 3 |
| PT 460 Retail Nursery Management | 3 | 2 - 3 |
| PT 462 Plant Hormones | 3 | 2 - 3 |
| PT 463 Landscape Design and Construction | 3 | 2 - 3 |
| PT 554 Advanced Orchid Technology | 5 | 2 - 4 |

V. Special Problems

| | | |
|-------------------------|---|---|
| PT 510 Special Problems | 3 | - |
|-------------------------|---|---|

VI. Field Work

| | | |
|-------------------|---|---|
| PT 498 Field Work | 2 | - |
|-------------------|---|---|

Field of Study : Vegetable Crop Production

1. Basic Requirement

(minimum requirement = 12 credits)

| | no. of credits | no. of hours/week (lecture-lab.) |
|--|----------------|-------------------------------------|
| GE 301 Technical English 5 | 2 | 2 - 1 |
| 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 Courses

(minimum requirement = 17 credits)

| | no. of credits | no. of hours/week (lecture-lab.) |
|--|----------------|-------------------------------------|
| EC 305 Economic and Agricultural Technology Development | 1 | 1 - 0 |
| GE 306 Applied Plant Physiology Development | 3 | 2 - 3 |
| GE 308 Genetics | 3 | 2 - 3 |
| FM 412 Farm Machinery | 3 | 2 - 3 |
| SF 311 Applied Soil Science | 4 | 3 - 3 |
| SF 411 Soil and Water Management | 3 | 2 - 3 |

III. Major Courses

(minimum 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 | 2 - 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 of Vegetable Crops | 4 | 3 - 3 |
| 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 requirement = 6 credits)

| | | |
|--|---|-------|
| PT 462 Plant Hormones | 3 | 2 - 3 |
| PT 472 Environmental Controlled in Horticulture | 3 | 2 - 3 |
| PT 475 Tomato Production | 3 | 2 - 3 |
| AB 430 Apply Agricultural Marketing | 3 | 3 - 0 |

V. Special Problems

| | | |
|-------------------------|---|---|
| PT 510 Special Problems | 3 | - |
|-------------------------|---|---|

VI. Field Work

| | | |
|-------------------|---|---|
| PT 498 Field Work | 2 | - |
|-------------------|---|---|

Field of Study : Pomology

I. Basic Requirements

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
| (minimum requirements = 13 credits) | | |
| 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 |
| EC 305 Economic and Agricultural Technology Development | 1 | 1 - 0 |
| AB 411 Human Relationships and Personal Management | 3 | 3 - 0 |

II. Related Courses

| | no.of credits | no.of hours/week (lecture-lab.) |
|---|---------------|------------------------------------|
| (minimum requirements = 17 credits) | | |
| GE 306 Applied Plant Physiology | 3 | 2 - 3 |
| GE 308 Genetics | 3 | 2 - 3 |
| SF 311 Applied Soil Science | 4 | 3 - 3 |
| PT 341 Introduction to Pomology | 2 | 1 - 3 |
| PT 352 Plant Materials & Plant Identification | 2 | 1 - 3 |
| FM 412 Farm Machinery | 3 | 2 - 3 |

III. Major Courses

| | no.of credits | no.of hours/week (lecture-lab.) |
|---|---------------|------------------------------------|
| (minimum requirements = 35 credits) | | |
| PT 361 Plant Judging | 2 | 1 - 3 |
| SF 411 Soil and Water Management | 3 | 2 - 3 |
| PT 420 Plant Pests and Their Control | 3 | 2 - 3 |
| PT 421 Crop Diseases and Their Control | 3 | 2 - 3 |
| PT 432 Farm Crop Improvement | 3 | 2 - 3 |
| PT 448 Experimental Techniques and Analysis | 3 | 2 - 3 |
| PT 480 Harvesting Packing and Marketing of Fruit Crops | 3 | 2 - 3 |
| PT 481 Fruit Crops Processing | 3 | 2 - 3 |
| PT 482 Orchard Management | 3 | 2 - 3 |
| PT 499 Seminar | 1 | 1 - 0 |
| PT 511 Farm Practices 1 | 1 | 0 - 3 |

IV. Elective Courses

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
| (minimum requirements = 6 credits) | | |
| PT 462 Plant Hormones | 3 | 2 - 3 |
| PT 472 Environmental Controlled in Horticulture | 3 | 2 - 3 |
| PT 490 Physiology of Fruit Crops | 3 | 2 - 3 |
| PT 491 Apiculture | 3 | 2 - 3 |
| PT 493 Agro-Forestry | 3 | 2 - 3 |
| PT 531 Plantation of Industrial Crops | 3 | 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 Science), MIAT
 Cert, in Fish Culture, Taiwan

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

Asst. Prof. Viroj Chantararat, 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 Tawarpitruks, 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 (minimum requirements) | no. of credits | % |
|----------------------------------|----------------|--------|
| I. Basic Requirements | 12 | 15.79 |
| II. Related Courses | 21 | 27.63 |
| III. Major Courses | 32 | 42.11 |
| IV. Electives | 6 | 7.89 |
| V. Special Problems | 3 | 3.95 |
| VI. Field Work | 2 | 2.63 |
| Total | 76 | 100.00 |

Field of Study: Poultry Technology

| I. Basic Requirements | no. of credits | no. of hours/week (lecture-lab.) |
|---|----------------|-------------------------------------|
| (minimum requirements= 12 credits) | | |
| 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 Courses

| | | |
|---|---|-------|
| (minimum 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 Courses

| | no. of credits | no. of hours/week (lecture-lab.) |
|---|----------------|-------------------------------------|
| (minimum requirements = 32 credits) | | |
| 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 |
| 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

(minimum 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 Problems

no.of credits no.of hours/week
(lecture-lab.)

| | | | |
|--------|------------------|---|---|
| PT 510 | Special Problems | 3 | - |
|--------|------------------|---|---|

VI. Field Work

| | | | |
|--------|------------|---|---|
| PT 498 | Field Work | 2 | - |
|--------|------------|---|---|

Field of Study : Dairy Production

I. Basic Requirements

(minimum 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 Management | 3 | 3 - 0 |

II. Related Courses

(minimum 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 Sanitation | 3 | 2 - 3 |
| 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 Courses

(minimum requirements = 32 credits)

| | no.of credits | no.of hours/week (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

(minimum 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 | Experimental 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 |
| AB 430 | Apply Agricultural Marketing | 3 3 - 0 |

V. Special Problems

| | no.of credits | no.of hours/week (lecture-lab.) |
|--------|------------------|------------------------------------|
| PT 510 | Special Problems | 3 - |

VI. Field Work

| | | |
|--------|------------|-----|
| PT 498 | Field Work | 2 - |
|--------|------------|-----|

Field of Study : Beef Production

Curricula

I. Basic Requirements

(minimum requirements = 11 credits)

| | no.of credits | no.of hours/week (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 Courses

| lated Courses | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
| (minimum requirements = 24 credits) | | |
| 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 Courses

| Major Courses | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
| (minimum requirements = 30 credits) | | |
| AT 331 Beef cattle Farm Management | 3 | 2 - 3 |
| AT 412 Artificial 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

| elective | no.of credits | no.of hours/week (lecture-lab.) |
|------------------------------------|---------------|------------------------------------|
| (minimum requirements = 6 credits) | | |
| 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 |

| | | | |
|--------|------------------------------|---|-------|
| AT 474 | Cattle and Buffalo Marketing | 3 | 2 - 3 |
| PT 411 | Soil and Water Management | 3 | 2 - 3 |

V. Special Problems

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
|--|---------------|------------------------------------|

| | | | |
|--------|------------------|---|---|
| PT 510 | Special Problems | 3 | - |
|--------|------------------|---|---|

VI. Field Work

| | | | |
|--------|------------|---|---|
| PT 498 | Field Work | 2 | - |
|--------|------------|---|---|

Field of Study : Swine Production Technology

Curricula

I. Basic Requirements

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
|--|---------------|------------------------------------|

(minimum requirements = 12 credits)

| | | | |
|--------|---|---|-------|
| GE 301 | Technical English 5 | 2 | 2 - 0 |
| GE 303 | Thai Government and Social Development | 3 | 2 - 2 |
| GE 304 | Principle of Statistics | 3 | 3 - 0 |
| GE 320 | Physical Education | 1 | 0 - 2 |
| AB 411 | Human Relationships and Personal Management | 3 | 3 - 0 |

II. Related Courses

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
|--|---------------|------------------------------------|

(minimum requirements = 21 credits)

| | | | |
|--------|---|---|-------|
| AB 305 | Economic and Agricultural Technology | 1 | 1 - 0 |
| GE 308 | Genetics | 3 | 2 - 3 |
| GE 309 | General Microbiology | 3 | 2 - 3 |
| AT 310 | Introduction to Animal Science | 2 | 2 - 0 |
| AT 312 | Anatomy and Physiology of Farm Animals | 3 | 2 - 3 |
| GE 313 | Fundamental Biochemistry | 3 | 2 - 3 |
| FM 413 | Farm Electricity, Plumbing and Sanitation | 3 | 2 - 3 |
| AT 480 | Experimental Techniques and Analysis in Animal Research | 3 | 2 - 3 |

III. Major Courses

| | no.of credits | no.of hours/week (lecture-lab.) |
|--|---------------|------------------------------------|
|--|---------------|------------------------------------|

(minimum requirements = 30 credits)

| | | | |
|--------|-------------------------------|---|-------|
| AT 311 | Animal Reproduction | 3 | 2 - 3 |
| AT 332 | Swine Farm Management | 3 | 2 - 3 |
| AT 402 | Meat Technology | 3 | 2 - 3 |
| AT 412 | Artificial Insemination | 3 | 2 - 3 |
| AT 413 | Animal Growth | 3 | 2 - 3 |
| AT 460 | Meat Inspection | 2 | 1 - 3 |
| AT 467 | Livestock Improvement | 3 | 2 - 3 |
| AT 475 | Swine Feeds and Feeding | 3 | 2 - 3 |
| AT 476 | Swine Diseases and Sanitation | 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. Elective Courses

(minimum requirements = 6 credits)

| | | | |
|--------|--------------------------------|---|-------|
| 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 Problems

| | | | |
|--------|------------------|---|---|
| PT 510 | Special Problems | 3 | - |
|--------|------------------|---|---|

VI. Field work

| | | | |
|--------|------------|---|---|
| PT 498 | Field Work | 2 | - |
|--------|------------|---|---|

Field of Study : Fisheries Technology

Curricular

I. Basic Requirements

(minimum requirements = 12 credits)

| | | | |
|--------|--|---|-------|
| 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 Relationship and Personal Management | 3 | 3 - 0 |

II. Related Courses

(minimum requirements = 21 credits)

| | | | |
|--------|--|---|-------|
| 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 Development | 1 | 1 - 0 |
| 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 |

| III. Major Courses | | no.of credits | no.of hours/week (lecture-lab.) |
|-------------------------------------|-------------------------------------|---------------|------------------------------------|
| (minimum requirements = 34 credits) | | | |
| 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 | Ichthyology | 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 (lecture-lab.) |
|------------------------------------|------------------------------|---------------|------------------------------------|
| (minimum requirements = 6 credits) | | | |
| 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 Aquatic Plants | 2 | 1 - 3 |

| V. Special Problems | | no.of credits | no.of hours/week (lecture-lab.) |
|---------------------|------------------|---------------|------------------------------------|
| PT 510 | Special Problems | 3 | - |

| VI. Field Work | | | |
|----------------|------------|---|---|
| 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 Enviromental Conservation

Curricula (for two academic years)

| Structure (minimum requirements) | no. of credits | % |
|----------------------------------|----------------|--------|
| I. Basic Requirements | 12 | 15.79 |
| II. Related Courses | 18 | 23.78 |
| III. Major Courses | 35 | 46.05 |
| IV. Electives | 6 | 7.89 |
| V. Special Problems | 5 | 6.57 |
| | 76 | 100.00 |

Field of Study: Landscape Technology

Curricula

| I. Basic Requirements | | no. of credits | no. of hours/week |
|-------------------------------------|---|----------------|-------------------|
| (minimum 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 Management | 3 | 3 - 0 |
| II. Related Courses | | no.of credits | no.of hours/week |
| (minimum 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 | Applied Plant Physiology | 3 | 2 - 3 |
| SF 311 | Applied Soil Science | 4 | 3 - 3 |
| PT 351 | Ornamental Plants and Identification | 3 | 2 - 3 |
| III. Major Courses | | no.of credits | no.of hours/week |
| (minimum requirements = 35 credits) | | | (lecture-lab.) |
| LE 314 | Introduction to Landscape Architecture | 3 | 2 - 3 |
| 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 | Landscape 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 |
|------------------------------------|--|---------------|------------------|
| (minimum 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 Problems | | 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 Science, 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, | B.S. (Agr.) Farm Mechanics, KU |
| Mr. Thienchai Sundusdec, | B. Eng. (Agri). KU |
| Mr. Rachata Chuaviroj, | 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 manufacturing-processing 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)

| Structure (minimum requirements) | no. of credits | % |
|----------------------------------|----------------|---------------|
| 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 | <u>2</u> | <u>2.53</u> |
| Total | <u>80</u> | <u>100.00</u> |

Field of Study: Agricultural Business Administration

| I. Basic Requirements | | no. of credits | no. of hours/week |
|------------------------------------|---|----------------|-------------------|
| (minimum 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 Management | 3 | 3 - 0 |
| II. Related Courses | | | |
| 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 Courses | | | |
| (minimum 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 |
| AB 430 | Apply Agricultural Marketing | 3 | 3 - 0 |

IV. Electives

(minimum requirement = 12 credits)

| | | | |
|--------|---|---|-------|
| AB 342 | 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 Theory | 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 Mark Law | 3 | 3 - 0 |
| AB 426 | Civil and Commorcil Code Insurance | 3 | 3 - 0 |
| AB 427 | Labour Law | 3 | 3 - 0 |
| AB 428 | Property and Land Law | 3 | 3 - 0 |
| AB 431 | Marketing the Main Agricultural Products of Thailand | 3 | 3 - 0 |
| AB 432 | Salemanship and Advertising | 3 | 3 - 0 |
| AB 441 | Managerial Accounting | 3 | 3 - 0 |

V. Special Problems

| | | | |
|--------|------------------|---|---|
| AB 412 | Special Problems | 2 | - |
|--------|------------------|---|---|

VI. Practical Training

| | | | |
|--------|--------------------|---|---|
| AB 413 | Practical Training | 2 | - |
|--------|--------------------|---|---|

Department of Economics and Agricultural Cooperative

Head: Asst. Prof. Lersont Suwannitya,

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

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.

| | |
|----------------------------------|--|
| Asst. Prof. Snit Varith, | B.S. (Agr.), Agr. Econ., KU Cert. in Training Method for Management, UK |
| Asst. Prof. Vichai Tanvatanagul, | B.A., Economics, CMU 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. |
| 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 | % |
|----------------------------------|----------------|--------|
| 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 | no. of credits | no. of hours/week |
|--|----------------|-------------------|
| (minimum requirement = 10 credits) | | (lecture-lab.) |
| GE 301 Technical English 5 | 2 | 2 - 0 |
| GE 302 Technical English 6 | 2 | 2 - 1 |
| GE 303 Thai Government and Social 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

(minimum requirements = 39 credits)

| | no.of credits | no.of hours/week (lecture-lab.) |
|--------|---------------|------------------------------------|
| AB 310 | 3 | 2 - 2 |
| AB 340 | 3 | 2 - 2 |
| AB 411 | 3 | 3 - 0 |
| | | Management |
| AB 413 | 3 | 3 - 0 |
| AB 419 | 2 | 2 - 0 |
| GE 312 | 2 | 2 - 0 |
| EC 302 | 3 | 3 - 0 |
| EC 303 | 3 | 3 - 0 |
| EC 304 | 3 | 2 - 3 |
| EC 318 | 2 | 2 - 0 |
| | | Cooperatives |
| EC 403 | 3 | 2 - 3 |
| EC 419 | 3 | 3 - 0 |
| EC 423 | 1 | 1 - 0 |

IV. Electives

(minimum requirement = 9 credits)

| | | |
|--------|---|---------------------|
| GE 414 | 3 | 3 - 0 |
| | | Science |
| EC 410 | 3 | 3 - 0 |
| EC 414 | 3 | 3 - 0 |
| | | Countries |
| EC 415 | 3 | 3 - 0 |
| EC 416 | 3 | 3 - 0 |
| EC 417 | 3 | 3 - 0 |
| | | System |
| EC 418 | 3 | 3 - 0 |
| EC 420 | 3 | 3 - 0 |
| EC 421 | 3 | 3 - 0 |
| EC 422 | 3 | 3 - 0 |
| | | Supply and Services |
| AB 421 | 3 | 3 - 0 |
| AB 424 | 3 | 3 - 0 |

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.), Agronomy, 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, KCU

M.S. (Genetics), KU

Asst. Prof. Preecha Sirisaard,

B.Ed. (Biology) Sri Nakharinwirot U.

Asst. Prof. Naline Linpissal,

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, | B.S. (Nutrition & Public Health), Mahidol U. |
| Asst. Prof. Charas Gayai, | B.S. (Education), CMU |
| | M.S. (Applied Statistics), NIDA |
| Mr. Sittisin Bovonsombut, | 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 | % |
|--|----------------|---------------|
| 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 | <u>2</u> | <u>2.63</u> |
| Total | <u>76</u> | <u>100.00</u> |

Field of Study: Agricultural Extension

| I. Basic Requirements | 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 Courses

(minimum requirements = 12 credits)

| | no.of credits | no.of hours/week (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 |

III. Major Courses

(minimum requirements = 31 credits)

| | no.of credits | no.of hours/week (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 Extension Program | 2 | 2 - 0 |
| AE 401 Rural Development | 3 | 3 - 0 |
| AE 402 Organization and Operation of Farm Institutes | 2 | 2 - 0 |
| AE 403 Program Planning and Evaluation | 2 | 2 - 0 |
| AE 414 Research Methodology | 3 | 3 - 0 |
| AE 499 Seminar | 1 | 1 - 0 |
| GE 403 Farm Management Practices | 3 | 2 - 3 |
| AB 407 Agricultural Law | 3 | 3 - 0 |
| AB 411 Human Relation and Personnel Management | 3 | 3 - 0 |

IV. Minor Courses

(minimum 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 writing 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 Development | 3 | 3 - 0 |

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

| VI. Student Training or Special Problem | no.of credits | no.of hours/week |
|--|---------------|------------------|
| (minimum 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, | B.Ed. (History) Sri Nakariniwrot U. |
| Academic Staff: | |
| 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 | % |
|----------------------------------|----------------|--------|
| 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 Requirements | no. of credits | no. of hours/week |
|---|----------------|-------------------|
| (minimum 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 Personnel Management | 3 | 3 - 0 |

II. Related Courses

| | | no.of credits | no.of hours/week (lecture-lab.) |
|------------------------------------|--|---------------|------------------------------------|
| (minimum requirement = 18 credits) | | | |
| 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 Technology Development | 1 | 1 - 0 |

III. Major Courses

| | | no.of credits | no.of hours/week (lecture-lab.) |
|------------------------------------|---|---------------|------------------------------------|
| (minimum requirement = 34 credits) | | | |
| AI 301 | Introduction to Food Technology and Industry | 3 | 3 - 0 |
| AI 302 | Food Preservation 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 Legislation and Standardization | 2 | 2 - 0 |

IV. Electives Courses

| | | no.of credits | no.of hours/week (lecture-lab.) |
|-----------------------------------|---|---------------|------------------------------------|
| (minimum requirement = 6 credits) | | | |
| AI 409 | Agricultural Process Engineering 1 | 3 | 2 - 3 |
| AI 410 | Agricultural Process Engineering 2 | 3 | 2 - 3 |
| AI 411 | Principles of New Food Product Development | 3 | 3 - 0 |
| AI 412 | Food Packaging | 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. 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 fulfilling the Institute's objectives, aside from instruction, to undergo research studies on agricultural problems encountered to the rural areas, to contribute modern technology to the farmers in cooperation with other governmentis 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 Highland Agricultural Development & Special Projects

Head: Asst. Prof. Phandach Puranapun,

B.S. (Field Crops) KU

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

Staff:

Mr. Suwat Tantivong,

B. Agr. Tech., MIAT

Mr. Somboon Gladgleb,

B. Agr. Tech., MIAT

Mr. Pon Panworn,

B. Agr. Tech., MIAT

Mr. Prasit Kabchan,

Cert. in Vocational 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; gift; hire of property; 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-mathematical 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 ADVERTISING: 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, socio-economic environment determining methods of advertising, evaluation of advertising.

AB 342 COOPERATIVES ACCOUNTING 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 Farmers, 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 ACCOUNTING I: 3 credits (2 hrs. lecture 2hrs.

lab.) posting and recording business transactions in the journal, ledger and other book; asset liability and capital in the balance sheet; single and double entries.

AB 341 PRINCIPLES OF ACCOUNTING II: prereq. Principles of Accounting

I, 3 credits, (2 hrs. lecture 2 hrs. lab.), cash and investment, petty cash and imprest system, bank reconciliation statement, valuation of assets and liabilities, partnership and company, analysis of financial statements and accounting for a manufacturing concern.

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.

EC 302 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 Credits (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 COOPERATIVES: 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; cooperative 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 PRACTICES: 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 REFORM: 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 DEVELOPMENT: 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 COOPERATIVES: 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 conservation 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 DEVELOPMENT AND WORLD ECONOMY:

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 fluctuation, 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 loans by farmers.

EC 418 VARIOUS TYPES OF COOPERATIVES:

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 settlement, thrift and saving, shop, and fisheries cooperatives.

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.

EC 421 AGRICULTURAL PRODUCT 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 COOPERATIVES: 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 aloud, 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 distribuiton, 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 PHYSIOLOGY: 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 STATISTICS 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 fluctuations and irregular variation, correlation and analysis of simple regression, correlation and analysis of multiple regression.

GE 314 INTRODUCTION TO MATHEMATICS: 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 AGRICULTURAL 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 writing applicable for agricultural extension work to the farmers and the public.

AE 305 ADMINISTRATION IN AGRICULTURAL EXTENSION PROGRAM: 3 credit hours (lecture only), Principles, theories, administrative methods, and problem analysis of hierarchical structure in agricultural extension work, personnel, and administrative factors for effective operation.

AE 306 INTEGRATED AGRICULTURAL 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 JUDGING: 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 extension 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/SPECIAL 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 effort 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 TECHNOLOGY: 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 effort to food in the way of chemistry, physis, 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 TECHNOLOGY: 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 transferring raw materials. Planing the industrial plant lay-out.

AI 411 PRINCIPLES OF NEW FOOD PRODUCT DEVELOPMENT: 3 Credits (3 hrs. lecture), Prerequisite-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 TECHNOLOGY: 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 TECHNOLOGY: 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 MICROBIOLOGY: 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, antibiotics and vaccines by using microorganisms. Waste water treatment from industrial plant by using microorganisms.

AI 419 POULTRY PRODUCTS TECHNOLOGY: 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 TECHNOLOGY: 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 conducive to the growth of important local field crops; multiple cropping system; growing in medium size land.

PT 341 INTRODUCTION TO POMOLOGICAL: 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, cassava etc., both of pathogens and non-parasites with emphasis on diagnosis of important symptoms; safety measures in handling chemicals.

PT 422 WEEDS AND THEIR CON-

TROL: 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 DISEASES:** 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 Identification, 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 PRODUCTION:** 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 JUDGING:** 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, hormone, fertilizing, etc.

PT 460 RETAIL NURSERY MANAGEMENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), wide 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. lab.), 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 VEGETABLE 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, fruit-setting, as related to photoperiodism; arboriculture; environmental adjustments and media to increase yield and its quality; designing plant nurseries and other equipment and facilities.

PT 473 VEGETABLE CROP MANAGEMENT: 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 harvest; distribution and transportation to markets; excursions to vegetable crop farms.

PT 474 VEGETABLE CROP IMPROVEMENT AND SEED PRODUCTION: 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 equilibrium 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 AQUACULTURE:** 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 MANAGEMENT:** 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 MANAGEMENT:

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; Dosiabie properties of fish pond, fish feed and feeding, procedures for feeding, nursery, and mettuplication; 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 TECHNOLOGY: 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; symptoms, 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 LABORATORY: 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 governing milk secretion, etc.

AT 467 DAIRY CATTLE IMPROVEMENT: 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 SANITATION: prereq. General Microbiology, Anatomy and Physiology of Farm Animals, 3 credits (2 hrs. lecture, 3 hrs. lab), important diseases and parasites of dairy cattle; symptoms, 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 SANITATION: prereq. General Microbiology, Anatomy and Physiology of Farm Animals, 3 credits (2 hrs. lecture, 3 hrs. lab), important diseases and parasites of dairy cattle; symptoms, 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 credits (2 hrs. lecture, 3 hrs. lab.), Feeds and crop residues, type of animals and growth pattern of animal feedlot, cost, profit and marketing of animal feedlot.

- AT 473 ANIMAL BEHAVIOR:** 3 credits (2 hrs. lecture, 3 hrs. lab.), Influence of hormones and environment to animal behavior, Various types of behavior, and advantages of behavior.
- AT 474 CATTLE AND BUFFALO MARKETING:** 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 rotation.
- AT 476 SWINE DISEASES AND SANITATION:** prereq. Anatomy and Physiology of Farm Animals, General Microbiology, 3 credits (2 hrs. lecture, 3 hrs. lab.), important diseases and parasites of swine; symptoms, diagnosis and prevention; identification and sanitation of diseases and parasites.
- AT 477 SWINE HOUSING AND EQUIPMENTS:** 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 PARASITES: 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 MANAGEMENT: 3 credits (2 hrs. lecture, 3 hrs. lab.), study of aquatic ecology, aquatic population, improvement of fishery resources, basic data collection, utilization and management of fishery resources, field trip included.

AT 492 FISHERY LAW AND REGULATIONS: 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 CULTURE: 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 consultation; 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 PRODUCTION: 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 LANDSCAPE 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: **BO-TANY** 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 CONSTRUCTION: 3 credits (2 hrs. lecture, 3 hrs. lab.), Pre : **LANDSCAPE DESIGN AND PLANNING** or **LANDSCAPE 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 RECREATION AREAS: 3 credits (2 hrs. lecture,

3 hrs. lab.), Pre: **NATIONAL RESOURCES 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 architectural 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 symptoms 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 MANAGEMENT: 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 planning in the farm; the use and maintenance of tools and equipment for irrigation and drainage.

Department of Farm Mechanics

FM 412 FARM MACHINERY: 3 credits

(2 hrs. lecture, 3 hrs. lab.), Using repairing, 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, installment 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.

