



LEYTE STATE UNIVERSITY  
6521-A Visca, Baybay, Leyte, Philippines

Office of the Secretary of the University  
and of the Board of Regents

EXCERPT FROM THE APPROVED MINUTES OF THE  
22<sup>nd</sup> LSU Board of Regents Meeting  
09 December 2005 \* Midtown Hotel, Cebu City

Proposal to Revise the Bachelor Science  
in Agricultural Engineering Curriculum

**BOR RESOLUTION NO. 97, s. 2005**

Approving the proposal to revise the Bachelor of Science in  
Agricultural Engineering (BSAE) curriculum, as presented.

\* Attached: Approved proposal

BOARD ACTION: **APPROVED**  
Date : 09 December 2005  
ATTACHMENT: 1

Certified True and Correct:

  
DANIE M. TUDTUD JR.  
Board Secretary

cc: OVPAA  
Dean, CEAI  
DAE  
University Registrar  
ODCI

**PROPOSAL TO REVISE THE  
BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING  
(BSAE) CURRICULUM**

**Rationale**

The guiding principles for the professional practice and the offering of the BSAE degree program are embodied in Republic Act 8559 of 1998 (An Act Regulating the Practice of Agricultural Engineering in the Philippines). Republic Act 8559, among others, divided agricultural engineering to the following eleven (11) sub-disciplines, namely: 1) agricultural machinery, equipment and power units; 2) agricultural buildings and structures; 3) agricultural electrification and energy; 4) agricultural processing and food engineering; 5) soil and water conservation; 6) irrigation and drainage and water resources management; 7) agricultural waste disposal and utilization and environmental management; 8) agricultural information resources and technology; 9) agricultural instrumentation and control; 10) fishery and aquacultural resources engineering; and 11) forest product resource engineering (attached copy of part of the Act and its Implementing Rules and Regulations).

This Act has been the basic reference for any continuing revisions of the BSAE degree program by the Commission on Higher Education (CHED) Technical Panel for Agricultural Education (TPAE) Task Force in Agricultural Engineering (TFAE) to meet the changing demands on agricultural engineering needs of the country. On January 19, 2001, CHED issued the Memorandum Order No. 04 regarding the revised guiding principles and minimum standards for the Bachelor of Science in Agricultural Engineering Program for information, guidance and compliance of all concerned (see attached copy).

In two meetings spearheaded by CHED-TPAE-TFAE held on October 14-15, 2003 in Tagaytay City and on January 24-25, 2004 at the Department of Agriculture-Main Office with the heads and representatives of various colleges and universities both private and government-operated, the Chairman of the Board of Examiners for Agricultural Engineers, Engr. George Canapi, announced recent mandated inclusions of aquaculture engineering and forest products engineering to their existing BSAE curriculum. Topics on these required inclusions will be included in the licensure examination for agricultural engineering.

It is mainly for this reason that revisions in the existing BSAE degree program being offered by the Leyte State University are proposed to be responsive to the recent requirement of the CHED-TPAE-TFAE. In addition to the inclusion of aquaculture and forest product engineering, operations research is proposed to be reinstituted into the curriculum to meet the minimum requirement for basic engineering courses. Minor revisions are also proposed for the change in some Agricultural Engineering (AE) course codes into Engineering Sciences (ESci) and all other AE course codes into AEng, and for the inclusion of entrepreneurial aspect in the curriculum. As a result of the proposed revision, the total number of units has consequently decreased.

**Employment Opportunities**

1. Instructors of agricultural engineering, mathematics, physics, computer science courses and other related fields in state colleges and universities.
2. Agricultural engineers, project managers and technical staff in the Department of Agriculture, National Food Authority (NFA), National Irrigation Administration (NIA), Philippine Invention Development Institute (PIDI), National Postharvest Institute for Research and Extension (NAPHIRE), and other agencies involved in rural development.



- 1  
2 3. Agricultural machine designer and manufacturer  
3  
4 4. Agricultural engineering researchers in academic institutions.  
5  
6 5. Agricultural engineering researchers in non-academic institutions.  
7  
8 6. Project engineers, inspectors and supervisors; machine designers, sales engineers and  
9 entrepreneurs.  
10  
11 7. Contractors of farm buildings and structures.  
12

### 13 Graduate Profile

#### 14 1. Knowledge

- 15  
16  
17 1.1 Understands general agricultural engineering concepts and principles.  
18  
19 1.2 Integrates basic theories, principles and practices in animal and crop production,  
20 entrepreneurship and management with agricultural engineering concepts and  
21 principles.  
22  
23 1.3 Possesses adequate knowledge of crop processing, soil and water conservation,  
24 aquacultural resources, forest products and agricultural structures, farm power  
25 and machineries, energy and rural electrification, and farm waste disposal,  
26 utilization and environmental management.  
27  
28 1.4 Knows the processes of making wise decision in the use of available resources  
29 for doing engineering jobs, and the methods and procedures of interpreting data  
30 and information for planning and development.  
31

#### 32 2. Attitude

- 33  
34 2.1 Appreciates the importance of agricultural engineering profession in rural  
35 development.  
36  
37 2.2 Values the importance of agricultural engineering research in facilitating rural  
38 development.  
39  
40 2.3 Appreciates the role of systematic planning and decision making in solving  
41 engineering problems in the farm.  
42  
43 2.4 Shows sensitivity to human needs and social problems especially their  
44 implication to agricultural engineering.  
45  
46 2.5 Internalizes of the responsibilities and obligation of agricultural engineers with  
47 understanding of one's strength and limitation.  
48

#### 49 3. Skills

- 50  
51 3.1 Operates and maintains effectively different agricultural tools, machines and  
52 equipment.  
53  
54 3.2 Designs and develops appropriate machines and effective ways of doing things  
55 to promote better living of the people.  
56



3.3 Uses engineering research findings to improve the home, community, and work environment.

3.4 Demonstrates managerial skills in the performance of the various tasks related to the practice of agricultural engineering profession.

3.5 Solves mathematical and engineering problems effectively with the application of appropriate method, formula or procedure.

## Proposed Changes and Institution of Courses

### A. Courses for Institution

1. AEng 164 – Forest Products Engineering – Engineering properties of wood; survey of forest products and manufacturing processes; handling, transport, processing and utilization of forest products.

Prerequisite: 4<sup>th</sup> Year Standing

5 hrs a week (2 lec; 3 lab.)

Credit: 3 units

2. AEng 175 – Aquaculture Engineering – Principles of fish culture and planning aquaculture systems; layout and design of aquaculture structures and pond facilities.

Prerequisites: 4<sup>th</sup> Year Standing

5 hrs a week (2 lec., 3 lab.)

Credit: 3 units

#### Rationale:

These courses are part of the 11 disciplines in the curriculum and practice of the agricultural engineering profession as embodied in the Republic Act No. 8559. Said courses will be included in the coming licensure examinations.

### B. Substitution of Courses

1. From: Econ 21- Farm Management- Management, land utilization, farm labor, analysis of cost and return, farm finance, and marketing of agricultural products.

Prerequisite: SocSci 13

5 hrs a week (2 lec, 3 lab)

Credit: 3 units

To: Mgnt 20- Introduction to Agribusiness- Principles and concepts of business organization and management with emphasis on the agribusiness sector.

Prerequisite: Soc Sci 13 (Socio-Economic Systems)

3 hrs a week (lec)

Credit: 3 units

#### Rationale:

Informal interviews revealed several graduates in agricultural engineering are engaged in self-employment as entrepreneurs while others are salesmen in multinational companies, even with insufficient background knowledge in business



management. This type of employment requires good basic knowledge in agricultural entrepreneurship and business management which is not emphasized in Econ 21 (Farm Management), but given more emphasis in Mgmt 20. The CHED-TPAE-TFAE also included "Agricultural Entrepreneur and Management" as one of the required courses in the aspects of fundamental agriculture in the AE Curriculum (See Comparison of Minimum Standard for the BSAE curriculum set by CHED and that of LSU-- page 15).

**C. Change in Nomenclature from AE (for Agricultural Engineering) to AEng and other AE courses to ESci (for Engineering Sciences)**

1. From: AE 135- Fundamentals of Surveying  
To: AEng 135- Fundamentals of Surveying
2. From: AE 132- Shop Practice  
To: AEng 132- Shop Practice
3. From: AE 151- Structural Design  
To: AEng 151- Structural Design
4. From: AE 152- Agricultural Structures  
To: AEng 152- Agricultural Structures
5. From: AE 155- Hydrometeorology  
To: AEng 155- Hydrometeorology
6. From: AE 156- Environmental Control Engineering  
To: AEng 156- Environmental Control Engineering
7. From: AE 157- Water Management Engineering  
To: AEng 157- Water Management Engineering
8. From: AE 158- Soil & Water Conservation Engineering  
To: AEng 158- Soil & Water Conservation Engineering
9. From: AE 159- Agricultural Power  
To: AEng 159- Agricultural Power
10. From: AE 162- Agricultural Machinery & Equipment  
To: AEng 162- Agricultural Machinery & Equipment
11. From: AE 171- Rural Electrification  
To: AEng 171- Rural Electrification
12. From: AE 173- Refrigeration & Air Conditioning  
To: AEng 173- Refrigeration & Air Conditioning
13. From: AE 198- Research Planning and Manuscript Preparation  
To: AEng 198- Research Planning and Manuscript Preparation
14. From: AE 199- Undergraduate Seminar  
To: AEng 199- Undergraduate Seminar
15. From: AE 200- Undergraduate Thesis  
To: AEng 200- Undergraduate Thesis



- 1 16. From: AE 200- Field Practice
- 2 To: AEng 200- Field Practice
- 3
- 4 17. From: AE 122- Engineering Graphics I
- 5 To: ESci 122 – Engineering Graphics I
- 6
- 7 18. From: AE 131- Engineering Graphics II
- 8 To: ESci 131- Engineering Graphics II
- 9
- 10 19. From: AE 133- Engineering Mechanics
- 11 To: ESci 133- Engineering Mechanics
- 12
- 13 20. From: AE 137- Engineering Materials
- 14 To: ESci 137- Engineering Materials
- 15
- 16 21. From: AE 134- Fluid Mechanics
- 17 To: ESci 134- Fluid Mechanics
- 18
- 19 22. From: AE 136- Thermodynamics & Heat Transfer
- 20 To: ESci 136- Thermodynamics & Heat Transfer
- 21
- 22 23. From: AE 130- Thermodynamics
- 23 To: ESci 130- Thermodynamics
- 24
- 25 24. From: AE 142- Strength of Materials
- 26 To: ESci 142- Strength of Materials
- 27
- 28 25. From: AE 154- Electronics and Instrumentation
- 29 To: ESci 154- Electronics and Instrumentation
- 30
- 31 26. From: AE 182- Engineering Economy
- 32 To: ESci 182- Engineering Economy
- 33

#### Rationale:

The change in the nomenclature from AE to AEng is to adopt to the University's standard 4-letter course coding of all course titles.

Other specified AE courses, considered as basic engineering sciences (ESci), are applicable to all fields in engineering that deal mostly with the science of nature. Such subjects are common to all engineering degree programs, and most of these subjects are required in the existing BS in Agricultural Engineering and in the BS in Geodetic and Geomatics Engineering curricular programs. These subjects will also be required in the future offerings of other fields of engineering in LSU. Hence, the proposed change.

#### D. Reinstitution of Courses and Change of Prerequisite

1. From: AE 156- Operations Research- Mathematical and computerized models for resources allocation and scheduling as applied to engineering problems; quantitative methods to decision making.

Prerequisite: CS 131- Introduction to Computer Programming

3 hrs a week (lec)

Credit: 3 units



To: ESci 156- Operations Research- Mathematical and computerized models for resources allocation and scheduling as applied to engineering problems: quantitative methods to decision making.

Prerequisite: CS 134- Principles of Computer Programming  
3 hrs a week (lec)  
Credit: 3 units

#### Rationale:

This course, which has been shelved for quite a time now, is proposed for reinstitution into the curricular program to meet the minimum requirement for basic engineering specified by the CHED-TPAE. The change in prerequisite is due to the replacement of CS 131 with CS 134 in the curriculum. Since this is an engineering science subject common to all engineering degree programs, course code AE is changed to ESci.

#### E. Change in Course Title, Description and Prerequisite and Number of Units

1. From: AE 153 – Machinery Design – Principles of designing machine elements and machinery; modern machine controls.

Prerequisite: AE 138 (Dynamics of Machinery)  
5 hrs a week (2 lec; 3 lab.)  
Credit: 3 units

To: AEng 153 – Agricultural Machinery Design – Analysis of mechanisms; vibration and dynamic forces; designing machine elements and machinery, modern machine controls

Prerequisite: AEng 133 (Eng'g. Mechanics)  
5 hrs a week (2 lec, 3 lab.)  
Credit: 3 units

#### Rationale:

The important subject topics in AE 138 (Dynamics of Machinery) have been incorporated in AEng 153. Thus, AEng 133 (Engineering Mechanics) is the most appropriate prerequisite for AEng 153 in view of the proposed changes. And as a consequence, the deletion gives way for the institution of 3 required courses (AEng 164 – Forest Products Engineering, AEng 175 – Aquaculture Engineering, and ESci 156- Operations Research).

2. From: AE 161- Crop Processing- Drying and storage of farm products; design, operation and maintenance of processing equipment.

Prerequisite: AE 136 (Thermodynamics and Heat Transfer)  
5 hrs a week ( 2 lec, 3 lab)  
Credit: 3 units

To: AEng 161- Agricultural Processing and Handling- Principles of drying and storage of agricultural products; operations and maintenance of postharvest equipment; design of agricultural processing systems.

Prerequisite: AEng 136 (Thermodynamics and Heat Transfer)  
5 hrs a week ( 2 lec, 3 lab)



Credit: 3 units

Rationale:

AE 161 (Crop Processing) covers topics related to processes and equipment for drying and storage of crops. With the inclusion of aquaculture in the BSAE curriculum as mandated by TPAE, there is a need to enrich the contents of the subject that will include processing of marine and animal products. Emphasis is also given to handling of agricultural products as an integral part of the postharvest flow process from the farm to market.

3. From: AE 182 – Engineering Economy – Time value of money, equipment and structure; economic analysis of engineering projects; feasibility study.

Prerequisite: Econ 21 (Farm Management) and AEng 152 (Ag. Structures)

3 hrs a week (lec.)

Credit: 3 units

To: ESci 182 – Engineering Economy – Time value of money, equipment and structure; economic analysis of engineering projects; feasibility study.

Prerequisite: 5<sup>th</sup> Year Standing

3 hrs a week (lec.)

Credit: 3 units

Rationale:

The change in the prerequisite to 5<sup>th</sup> year standing is to ensure that the student has enough background knowledge in most of the 4<sup>th</sup> year major subjects before he/she takes the said subject.

4. From: AE 184 – Engineering Specifications, Contract and Ethics – Project specification, bid and awards; contract preparation; Philippine agricultural engineering law; ethics and public relation.

Prerequisite: 5<sup>th</sup> year standing

3 hrs a week (lec.)

Credit: 3 units

To: AEng 184 – Engineering Specifications, Contract and Ethics – Project specification, bid and awards; contract preparation; Philippine agricultural engineering law; ethics and public relation.

Prerequisite: 5<sup>th</sup> year standing

1 hr a week (lec.)

Credit: 1 unit

Rationale:

Through the years it was realized that the subject matter could be covered in a 1-unit course. This subject is also a 1-unit course in the minimum standard required by CHED-TPAE for BSAE curriculum. Incidentally, the reduction from 3 to 1 unit would allow us to accommodate the required courses.



## F. Courses for Deletion

1. AE 138 – Dynamics of Machinery – Analysis of mechanisms and design of machine elements; vibrations; dynamic forces in machinery.

Prerequisite: AE 133 (Engineering Mechanics)

5 hrs a week (2 lec, 3 lab)

Credit: 3 units

### Rationale:

This course is no longer required in the minimum standard for the BSAE curriculum. The proposed modification of AEng 153 (Agricultural Machinery Design) also incorporates many of these topics and other topics also overlap with engineering mechanics. The deletion will give way to courses for institution to meet the minimum standard requirement of the BSAE curriculum.

2. Ecol 21- Fundamentals of Ecology- Basic principles and concept of ecology.

Prerequisite: Biol 11 (General Biology)

5 hrs a week (2 lec, 3 lab)

Credit: 3 units

### Rationale:

Knowledge on the ecology aspects address in Biol 11 would be a sufficient background in preparation for AEng 156 (Environmental Control Eng'g). Also, this subject (Ecol 21) is not included in the CHED's minimum requirement for the BSAE curriculum. The deletion will give way to courses for institution to meet the minimum standard requirement of the BSAE curriculum.

3. PPrt 21- Principles of Plant Protection- Pest management, ecology, injury threshold, recognition and prevention of important pest species.

Prerequisite: Bio 11 (General Biology)

5 hrs a week (2 lec, 3 lab)

Credit: 3 units

### Rationale:

The course content of Agronomy 21 (Fundamentals of Crop Production) in the aspects of crop science is already adequate to meet the basic requirement for the degree and for the licensure examination in Agricultural Engineering. This subject is not also included in the CHED's minimum requirement for the BSAE curriculum. The deletion of PP 21 will give way to courses for institution to meet the minimum standard requirement of the BSAE curriculum.



# Course Schedule

9

## BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

PRESENT						PROPOSED					
Course No.	Descriptive Title		Lec	Lab	Unit	Course No.	Descriptive Title		Lec	Lab	Unit
<b>FIRST YEAR</b>						<b>FIRST YEAR</b>					
<b>First Semester</b>						<b>First Semester</b>					
Engl	11	Comm. Skills I	3	0	3	Engl	11	Comm. Skills I	3	0	3
Psych	11	Gen. Psychology	3	0	3	Psych	11	Gen. Psychology	3	0	3
SoSc	13	Socio-Econ. Systems	3	0	3	SoSc	13	Socio-Econ. Systems	3	0	3
Chem	11	General Chemistry I	3	3	4	Chem	11	General Chemistry I	3	3	4
Math	13	College Algebra & Trigon.	5	0	5	Math	13	College Algebra & Trigon.	5	0	5
PE	11	Phys. Fitness & Gymn.			(2)	PE	11	Phys. Fitness & Gymn.			(2)
NSTP 11					(3)	NSTP 11					(3)
					18						18
<b>Second Semester</b>						<b>Second Semester</b>					
Engl	12	Comm. Skills II	3	0	3	Engl	12	Comm. Skills II	3	0	3
Socio	11	General Sociology	3	0	3	Socio	11	General Sociology	3	0	3
Philo	12	Contemp. Philo. Thoughts	3	0	3	SoSc	15	Phil. Hist. & Const.	3	0	3
Biol	11	General Biology	3	3	4	Biol	11	General Biology	3	3	4
Chem	21	General Chemistry II	2	3	3	Chem	21	General Chemistry II	2	3	3
Math	112	Anal. Geom. & Calc. I	5	0	5	Math	112	Anal. Geom. & Calc. I	5	0	5
PE	12	Rec'l. Games, Rhyth. Act.			(2)	PE	12	Rec'l. Games, Rhyth. Act.			(2)
NSTP 12					(3)	NSTP 12					(3)
					21						21
<b>SECOND YEAR</b>						<b>SECOND YEAR</b>					
<b>First Semester</b>						<b>First Semester</b>					
Speech	11	Speech Communication	3	0	3	Speech	11	Speech Communication	3	0	3
Hum	11	Introd. To Humanities	3	0	3	Huma	11	Introd. to Humanities	3	0	3
Agro	21	Fund. of Crop Production	2	3	3	Agron	21	Fund. of Crop Production	2	3	3
AnSc	22	Prin. of Animal Production	2	3	3	AnSc	22	Prin. of Animal Production	2	3	3
Physics	11	General Physics	3	3	4	Physics	11	General Physics	3	3	4
Math	113	Anal. Geom. & Calc. II	5	0	5	Math	113	Anal. Geom. & Calc. II	5	0	5
PE	13	Team Sports			(2)	PE	13	Team Sports			(2)
					21						21
<b>Second Semester</b>						<b>Second Semester</b>					
SoSc	15	Phil. Hist. & Const.	3	0	3	Philo	12	Contemp. Philo. Thoughts	3	0	3
Soil	22	Fund. of Soil Science	2	3	3	Soil	22	Fund. of Soil Science	2	3	3
Phys	21	College Physics	2	3	3	Phys	21	College Physics	2	3	3
CS	21	Introd. to Computers	2	3	3	CS	21	Introd. to Computers	2	3	3
Math	114	Calc. III & Diff. Eqns.	5	0	5	Math	114	Calc. III & Diff. Eqns.	5	0	5
AE	122	Eng'g. Graphics I	1	0	3	ESci	122	Eng'g. Graphics I	1	0	3
PE	14	Individual Sports			(2)	PE	14	Individual Sports			(2)
					20						20
<b>THIRD YEAR</b>						<b>THIRD YEAR</b>					
<b>First Semester</b>						<b>First Semester</b>					
SoSc	16	Life & Works of Rizal	3	0	3	SoSc	16	Life & Works of Rizal	3	0	3
CS	134	Prin. of Comp. Program.	2	3	3	CS	134	Prin. of Comp. Program.	2	3	3
AE	131	Eng'g. Graphics II	1	3	2	ESci	131	Eng'g. Graphics II	1	3	2
AE	133	Eng'g. Mechanics	5	0	5	ESci	133	Eng'g. Mechanics	5	0	5
AE	135	Fund. of Surveying	1	6	3	AE	135	Fund. of Surveying	1	6	3
AE	137	Eng'g. Materials	2	3	3	ESci	137	Eng'g. Materials	2	3	3
					19						19
<b>PRESENT</b>						<b>PROPOSED</b>					
Course No.	Descriptive Title		Lec	Lab	Unit	Course No.	Descriptive Title		Lec	Lab	Unit
<b>Second Semester</b>						<b>Second Semester</b>					
Stat	21	Elem. Statistics	2	3	3	Stat	21	Elem. Statistics	2	3	3
AE	132	Shop Practice	1	6	3	ESci	156	Operations Research	3	0	3
AE	134	Fluid Mechanics	3	3	4	ESci	134	Fluid Mechanics	3	3	4
AE	136	Thermo. & Heat Transfer	5	0	5	ESci	136	Thermo. & Heat Transfer	5	0	5
AE	138	Dynamics of Machinery	2	3	3	AE	153	Ag. Machinery Design	2	3	3
AE	142	Strength of Materials	3	0	3	ESci	142	Strength of Materials	3	0	3
					21						21



FOURTH YEAR						FOURTH YEAR					
First Semester						First Semester					
AE	151	Structural Design	2	3	3	AEng	151	Structural Design	2	3	3
AE	153	Machinery Design	2	3	3	AEng	162	Ag. Machinery & Eqpt.	2	3	3
AE	155	Hydrometeorology	2	3	3	AEng	155	Hydrometeorology	2	3	3
AE	157	Water Mngt. Eng.'g.	2	3	3	AEng	157	Water Mngt. Eng'g.	2	3	3
AE	159	Agricultural Power	3	0	3	AEng	159	Agricultural Power	3	0	3
AE	161	Crop Processing	2	3	3	AEng	161	Ag. Processing & Handling	2	3	3
AE 198/ Elective Res. Plann. & Manus. Prep.*/Elective**			3	0	3	AEng 198/ Elective Res. Plann. & Manus. Prep.*/Elective**			3	0	3
			21						21		
Second Semester						Second Semester					
Engl	21	Introd. to Literature	3	0	3	Engl	21	Introd. to Literature	3	0	3
AE	152	Agricultural Structures	2	3	3	AEng	152	Agricultural Structures	2	3	3
AE	154	Electronics & Instrum.	2	3	3	ESci	154	Electronics & Instrum.	2	3	3
AE	156	Environ. Control Eng'g	2	3	3	AEng	156	Environ. Control Eng'g.	2	3	3
AE	158	S & W Conserv. Eng'g.	2	3	3	AEng	158	S & W Conserv. Eng'g.	2	3	3
AE	162	Ag. Machinery & Eqpt.	2	3	3	AEng	164	Forest Products Eng'g	2	3	3
AE	200	Undergraduate Thesis			1	AEng	200	Undergraduate Thesis			1
			19						19		
Summer						Summer					
AE 200/200a – Undergraduate Thesis*/ Field Practice ***			2/4			AEng 200/200a Undergraduate Thesis*/ Field Practice **			2/3		
FIFTH YEAR						FIFTH YEAR					
First Semester						First Semester					
Fil	11	S. ng Pakipagtalasta-san at Retorika	3	0	3	Fil	11	S. ng Pakipagtalastasan at Retorika	3	0	3
SoSc	14	Phil.Soc.Prob., Agrar. Reform & Taxation	3	0	3	SoSc	14	Phil.Soc.Prob., Agrar. Reform & Taxation	3	0	3
Econ	21	Farm Management	2	3	3	Mgmt	20	Introd. to Agribusiness	3	0	3
Ecol	21	Fund. of Ecology	2	3	3	AEng	132	Shop Practice	1	6	3
PPrt	21	Prin. of Plant Protection	2	3	3	AEng	175	Aquaculture Eng'g	2	3	3
AE	171	Rural Electrification	2	3	3	AEng	171	Rural Electrification	2	3	3
AE	173	Ref. & Air Conditioning	3	0	3	AEng	173	Ref. & Air Conditioning	3	0	3
AE 200/200a- Undergraduate Thesis*/ Field Practice***			1			AEng 200/200a Undergraduate Thesis*/ Field Practice **			1		
			22						22		
PRESENT						PROPOSED					
Course No.	Descriptive Title		Lec	Lab	Unit	Course No.	Descriptive Title		Lec	Lab	Unit
Second Semester						Second Semester					
Fil	12	Panitkang Filipino	3	0	3	Fil	12	Panitkang Filipino	3	0	3
Elective***			3	0	3	Elective***			3	0	3
Elective***			3	0	3	Elective***			3	0	3
AE	182	Eng'g. Economy	3	0	3	ESci	182	Eng'g. Economy	3	0	3
AE	184	Eng'g. Specifications, Contract & Ethics	3	0	3	AEng	184	Eng'g. Specifications, Contract & Ethics	1	0	1
AE	199	Undergraduate Seminar	1	0	1	AEng	199	Undergraduate Seminar	1	0	1
AE 200/200a – Undergraduate Thesis*/ Field Practice***			2			AEng 200/200a Undergraduate Thesis*/ Field Practice ***			2		
			12/18						10/16		

TOTAL UNITS ----- 196/202

TOTAL UNITS ----- 194/200

\* - For Thesis Option

\*\* - Elective for Field Practice Option. English 24 (Scientific Writing) or AE 198 (Res. Planning and Manuscript Preparation)

\*\*\* - For Field Practice Option- Select 2 as electives from the following subjects:

1. GEng 135- Introd. to GIS and Database Management (3 units)

2. Mgmt 120- Feasibility Study Preparation (3 units)

3. RS 126- Philippine Rural Society (3 units)

4. Ext 132- Principles, Methods and Strategies in Extension (3 units)



**COMPARISON BETWEEN THE BSAE CURRICULUM AT LSU AND THE BSAE MINIMUM REQUIREMENT  
SET BY CHED**

CHED MINIMUM REQUIREMENT FOR BSAE CURRICULUM <sup>1/</sup>	Units	CURRENT BSAE CURRICULUM AT LSU	Units	PROPOSED BSAE CURRICULUM	Units
<b>GENERAL EDUCATION</b>	<b>51</b>		<b>55</b>		<b>55</b>
<b>A. Language &amp; Humanities</b>	<b>21</b>		<b>24</b>		<b>24</b>
<b>ENGLISH</b>					
1. Communication Skills I	3	Eng. 11- Communication Skills I	3	Eng. 11- Communication Skills I	3
2. Communication Skills II	3	Eng. 12- Communication Skills II	3	Eng. 12- Communication Skills II	3
3. -----		Eng. 21- Intro. to Literature	3	Eng. 21- Intro. to Literature	3
<b>FILIPINO</b>					
1. Kasanayan sa Komunikasyon	3	Fil. 11- Sining Pakipagtalastasan at Retorika	3	Fil. 11- Sining Pakipagtalastasan at Retorika	3
2. Pakikilalang Pilipino	3	Fil. 12- Panitikang Pilipino	3	Fil. 12- Panitikang Pilipino	3
<b>HUMANITIES</b>					
1. Hum I. Lit., Man & Society	3	Hum. 11- Intro. to Humanities	3	Hum. 11- Intro. to Humanities	3
2. Hum. II. Art, Man & Society	3	Psych 11- General Psychology	3	Psych 11- General Psychology	3
3. Hum III Intro. to Philo. & Logic	3	Philo 12- Contemp. Philo. Thoughts	3	Philo 12- Contemp. Philo. Thoughts	3
<b>B. MATH, NATURAL SCIENCES AND INFORMATION TECHNOLOGY</b>	<b>15</b>		<b>16</b>		<b>16</b>
<b>MATHEMATICS</b>					
1. Algebra	3	Math 13- Algebra & Trigonometry	5	Math 13- Algebra & Trigonometry	5
2. Plane Trigonometry	3	-----		-----	
3. Intro. to Computer	3	CS 21- Intro. to Computers	3	CS 21- Intro. to Computers	3



NATURAL SCIENCES				
1. Biology	3	Bio 11- General Biology	4	Bio 11- General Biology
2. Inorganic Chemistry	3	Chem 11- General Chemistry I	4	Chem 11- General Chemistry I
<b>C. SOCIAL SCIENCES &amp; RIZAL</b>				
1. Intro. to Behavioral Science	15		15	
2. Principles of Gov., Politics & Constitution	3	Socio 11- General Sociology	3	Socio 11- General Sociology
3. Principles of Economics	3	Soc Sci 15- Philippine History & Constitution	3	Soc Sci 15- Philippine History & Constitution
4. Rural Sociology & Institution	3	Soc Sci 13- Socio-Economics System	3	Soc Sci 13- Socio-Economics System
5. Life & Work of Rizal	3	Soc Sci 14- Phil. Soc. Prob. Agrarian & Taxation	3	Soc Sci 14- Phil. Soc. Prob. Agrarian & Taxation
		Soc Sci 16- Life & Work of Rizal	3	Soc Sci 16- Life & Work of Rizal
<b>PREPARATORY COURSES</b>				
1. Speech Communication	27		34	
2. Scientific & Technical Writing	3	Speech 11- Speech Communication	3	Speech 11- Speech Communication
	3	AE 198- Res. Planning & Manuscript Prep.	3	AE 198- Res. Planning & Manuscript Prep.
3. Anal. Geom. & Calc. I	3	Math 112- Anal. Geom. & Calc. I	5	Math 112- Anal. Geom. & Calc. I
4. Anal. Geom. & Calc. II	3	Math 113- Anal. Geom. & Calc. II	5	Math 113- Anal. Geom. & Calc. II
5. Anal. Geom. & Calc. III	3	Math 114- Calc. III & Diff. Equations	5	Math 114- Calc. III & Diff. Equations
6. Elementary Statistics	3	Stat 21- Elementary Statistics	3	Stat 21- Elementary Statistics
7. Organic Chemistry	3	Chem 21- Gen. Chemistry II	3	Chem 21- Gen. Chemistry II
8. General Physics I	3	Phys 11- Gen. Physics	4	Phys 11- Gen. Physics
9. General Physics II	3	Phys 21- College Physics	3	Phys 21- College Physics
<b>FUNDAMENTALS OF AGRICULTURE</b>				
1. Animal Science	15		18	
2. Crop Science	3	AnSci 22- Prin. of Animal Production	3	AnSci 22- Prin. of Animal Production
3. Soil Science	3	Agron 21- Fund. Crop Production	3	Agron 21- Fund. Crop Production
4. Agr. Entrepreneur & Mgmt.	3	SS 22- Fund. Soil Science	3	SS 22- Fund. Soil Science
5. Fishery Science	3	Econ 21- Farm Management	3	Mgmt 20- Introd. to Agribusiness
		PP 21- Prin. of Plant Protection	3	



		Ecol 21- Fund. of Ecology	3	44
<b>BASIC ENGINEERING</b>				
1. Eng'g. Mechanics	AE 133- Eng'g. Mechanics	5	43	44
2. Thermodynamics & Heat Transfer	AE 136- Thermo. & Heat Transfer	5		5
3. Fluid Mechanics	AE 134- Fluid Mechanics	4		5
4. Surveying	AE 135- Fundamental of Surveying	3		4
5. Eng'g. Graphics	AE 122- Eng'g. Graphics I	3		3
6. Materials of Engineering	AE 137- Engineering Materials	3		3
7. Strength of Materials	AE 142- Strength of Materials	3		3
8. Engineering Economy	AE 182- Engineering Economy	3		3
9. Farm Shop Practice	AE 132- Farm Shop Practice	3		3
10. Prin. of Elect. & Electronics	AE 154- Electron & Instrum.	3		3
11. Intro. To Operation Research	ESci 156- Operations Research	3		3
12. Ag. Eng'g. Law & Prof. Ethics	AE 184- Eng'g. Spec. Contract & Ethics	3		1
13. Computer Application I	CS 134- Prin. of Comp. Prog.	3		3
14. Computer Application II	AE 131- Eng'g. Graphics II	3		2
<b>PROFESSIONAL, AGRICULTURAL ENGINEERING COURSES</b>				
			39	42
<b>SOIL AND WATER RESOURCES</b>				
1. Irrigation & Drain. Eng'g.	AE 157- Water Mgmt. Engineering	3		3
2. Soil & Water Conservation	AE 158- Soil & Water Conservation	3		3
3. Hydrology	AE 155- Hydrometeorology	3		3
4. Aquaculture Eng'g II	AE 175- Aquaculture Engineering	3		3
<b>FARM POWER AND MACHINERY</b>				
1. Ag. Mech. & Machinery Mngt.	AE 162- Ag. Machinery & Equipment	3		3
2. Ag. Power & Energy Sources	AE 159- Ag. Power	3		3
3. Ag. Machinery Design	AE 153- Machinery Design	3		3
	AE 138- Dynamics of Machinery	3		



AGRICULTURAL PROCESSING AND ELECTRIFICATION				
1. Farm Electrification	3	AE 171- Rural Electrification	3	AEEng 171- Rural Electrification
2. Ag. Process & Handling	3	AE 161- Crop Processing	3	AEEng 161- Ag. Process. and Handling
3. Refrigeration Engineering	3	AE 173- Refrig. & Air Conditioning	3	AEEng 173- Refrig. & Air Conditioning
AGRICULTURAL STRUCTURES AND ENVIRONMENT				
1. Ag. Waste Management	3	AE 156- Envi. Control Engineering	3	AEEng 156- Envi. Control Engineering
2. Farm Structure Engineering	3	AE 152- Agricultural Structures	3	AEEng 152- Agricultural Structures
3. Design & Mgmt of Farm Structures	3	AE 151- Structural Design	3	AEEng 151- Structural Design
4. Forest Product Engineering	3	-----	3	AEEng 164- Forest Product Eng'g
ELECTIVES	0		6	
		Elective 1**	3	Elective 1**
		Elective 2**	3	Elective 2**
THESIS/FIELD PRACTICE	6		6	
1. Thesis/Field Practice	6	AE 200/AE 200a- Undergraduate Thesis/ Field Practice	6	AEEng 200/AE 200a- Undergraduate Thesis/Field Practice
UNDERGRADUATE SEMINAR	1		1	
1. Undergraduate Seminar	1	AE 199- Undergraduate Seminar	1	AEEng 199- Undergraduate Seminar
PHYSICAL EDUCATION	(8)	PE 11, 12, 13, 14	(8)	PE 11, 12, 13, 14
MILITARY SCIENCE	(6)	MSFP 11 & 12	(6)	MSFP 11 & 12
TOTAL UNITS	186		196/202	194/200

\* See attached copy of CHED Memo Order No. 04, series of 2001.

\*\* For Field Practice Option. - Select 2 of the 4 electives from the following subjects:

1. GEng 133- Introd. to GIS and Database Management (3 units)
2. Mgmt 120- Feasibility Study Preparation (3 units)
3. RS 126- Philippine Rural Society (3 units)
4. Ext 132- Principles, Methods and Strategies in Extension (3 units)



1 Faculty to Handle the Proposed Courses

- 2
- |      |                            |                                     |
|------|----------------------------|-------------------------------------|
| 3 1. | Dr. Justino Quimio -       | AE 164 (Forest Product Engineering) |
| 4 2. | Prof. Epifania G. Loreto - | AE 164 (Forest Product Engineering) |
| 5 3. | Prof. Manolo B. Loreto Jr. | AE 175 (Aquaculture Engineering)    |
- 6
- 7
- 8





# Board of Agricultural Engineering



REPUBLIC ACT No. 8559

## AN ACT REGULATING THE PRACTICE OF AGRICULTURAL ENGINEERING IN THE PHILIPPINES

Be it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:

### Article I

#### TITLE AND STATEMENT OF POLICY

Section 1. *Title.*— This Act shall be known as the "Philippine Agricultural Engineering Act of 1998."

Section 2. *Statement of Policy.*— It is hereby declared the policy of the State to promote and upgrade the practice of agricultural engineering profession in the Philippines by instituting measures that will result in relevant agricultural engineering education and better career prospects for professional agricultural engineers.

Likewise, the State hereby guarantees the delivery of basic and technical services to accelerate agricultural modernization through adequate and well trained professional agricultural engineers throughout the country:

### Article II

#### DEFINITION OF TERMS

Section 3. *Definition of Terms.*— As used in this Act, the following terms shall mean:

- (a) Practice of agricultural engineering – shall refer to the profession requiring the application of the fundamental and known principles of engineering to the peculiar condition and requirements of agriculture as an industry and as a field of science, and shall include, but not limited to, the following:
  - (1) Consultation, valuation, investigation and management services on agricultural engineering;
  - (2) Management or supervision and the preparation of engineering designs, plans, specifications, project studies and estimates for agricultural, aquaculture and fishery, and forest product machinery, agricultural buildings and structures, farm electrification and energy systems, agricultural processing equipment, irrigation and soils conservation systems and facilities, agricultural waste utilization systems and facilities;
  - (3) Conducting research and development, training and extension work, and consultancy services on agricultural engineering facilities/services, system and technologies;
  - (4) Testing, evaluation and inspection of agricultural, fishery and forest product machinery and other

related agricultural engineering facilities and equipment.

- (5) Management, manufacturing and/or marketing of agricultural machinery and other related agricultural engineering facilities and equipment;
  - (6) Teaching, agricultural engineering subjects in institution of learning in the Philippines;
  - (7) Employment with the government provided such item or position requires the knowledge and expertise of an agricultural engineer.
- (b) *Agricultural Engineer* – An agricultural engineer is a natural person who has been issued a certificate of registration by the Board of Agricultural Engineering and has taken the oath of profession of agricultural engineers.

### Article III

#### BOARD OF AGRICULTURAL ENGINEERING

Section 4. *Creation and Composition of the Board.*— There is hereby created a Board of Agricultural Engineering, hereinafter called the Board, to be composed of a chairman and two (2) members to be appointed by the President of the Philippines from a list of three (3) recommendees for each position, chosen and ranked in the order of preference and submitted by the duly accredited association of agricultural engineers in the Philippines.

The Board shall be organized not later than six (6) months from the effectivity of this Act.

Section 5. *Qualifications of Members of the Board.*— A member of the Board shall, at the time of their appointment, possess the following qualifications:

- (a) Must be a natural-born citizen and resident of the Philippines;
- (b) Must be at least thirty-five (35) years of age;
- (c) Must be a holder of Bachelor's Degree in Agricultural Engineering or its equivalent, conferred by a school, academy, college or university in the Philippines or abroad that is accredited by the Commission on Higher Education (CHED);
- (d) A registered agricultural engineer with a valid professional license and an active practitioner for not less than ten (10) years prior to his appointment;





# Board of Agricultural Engineering



## RESOLUTION No 01 SERIES OF 1998

### RULES AND REGULATIONS IMPLEMENTING REPUBLIC ACT NO. 8559

Pursuant to Section 29, Article V of Republic Act No. 8559, otherwise known as the "Philippine Agricultural Engineering Act of 1998", the following rules and regulations is hereby adopted and promulgated to carry out the provisions of the Act.

#### Article I TITLE, PURPOSES AND DEFINITIONS OF TERMS

Section 1. *Title*.— This Resolution shall be known and cited as the "Rules and Regulations Implementing the Philippine Agricultural Engineering Act of 1998".

Section 2. *Purpose*.— This Rules and Regulations is formulated and adopted to prescribe the procedures in carrying out the provisions of R.A. No. 8559 and –

- a. To ensure an efficient administration of and a reliable and honest licensure examination for the registration of agricultural engineers;
- b. To effectively supervise and regulate the practice of the agricultural engineering profession; and
- c. To ensure, in coordination with the Commission on Higher Education (CHED), that all institutions offering agricultural engineering education comply with the policies, standards and requirements of the course prescribed by the CHED in the areas of curriculum, faculty, library and facilities.

Section 3. *Definition of Terms*.— Unless otherwise provided, the following terms shall mean:

- a. *Commission* – shall mean the Professional Regulation Commission (PRC) created under P.D. No. 223, as amended
- b. *Commissioner* – shall mean the Chairman of the Professional Regulation Commission
- c. *Board* – shall mean the Board of Agricultural Engineers
- d. *Practice of Agricultural Engineering* – shall refer to the application of the fundamental and known principles of engineering to the peculiar condition and requirements of agriculture as an industry and as a field of science, and shall include, but not limited to the following:
  1. Consultation, valuation, investigation and management services on agricultural engineering;

2. Preparation of engineering designs, plans, specifications, project studies and estimates, and the supervision and other management services on the construction, installation, operation and maintenance of agriculture, aquaculture and fishery, and forest product machinery, agricultural buildings and structures, farm electrification and energy systems, agricultural processing equipment, irrigation and soil conservation systems and facilities, agricultural waste utilization system and facilities and other agricultural engineering facilities/services, systems and technologies;
3. Conducting research and development, training and extension work, consultancy services on agriculture engineering facilities/services, system and technologies;
4. Testing, evaluation and inspection of agricultural, fishery and forest product machinery and other related agricultural engineering facilities and equipment;
5. Management, manufacturing and/or marketing of agricultural machinery and other related agricultural engineering facilities, equipment, services, systems and technologies;
6. Teaching agricultural engineering subjects in institutions of learning in the Philippine accredited by the Commission on Higher Education;
7. Employment with the government provided such item or position requires the knowledge and expertise of an agricultural engineer. Such item or position may include but not limited to Science Research Specialist, Planning Officer, Project Development Officer, Manager and Director in accordance with the prescribed qualification standards.
- e. *Agricultural Engineering License* – shall refer to the professional license issued by the Commission
- f. *Certificate of Registration* – shall refer to the certificate issued by the Board after passing the required examination and upon completion of all requirements prescribed by the said Board
- g. *Syllabus* – shall refer to a table of specification containing the contents, systematically arranged by topics and subtopics, of the subjects in the curriculum



# Board of Agricultural Engineering

SOARING  
TOWARD  
GLOBAL  
HEIGHTS



- of the course to be covered in the Licensure Examination for Agricultural Engineer
- h. *Licensure Examination for Agricultural Engineers* – shall refer to the examination required to be taken and passed for registration as Agricultural Engineer
  - i. *Integration* – shall mean the unification or consolidation of existing organizations of Agricultural Engineers into one national organization which shall be recognized by the Board and the Commission as the only integrated and accredited association of Agricultural Engineers
  - j. *Agricultural Engineer* – shall refer to a natural person who has been issued a certificate of registration by the Board of Agricultural Engineering and has taken the oath of profession of Agricultural Engineers
  - k. *Agricultural Engineers Facilities, Services, System and Technologies* – shall refer to: (1) agricultural machinery, equipment and power units; (2) agricultural buildings and structures; (3) agricultural electrification and energy; (4) agricultural processing and food engineering; (5) soil and water conservation; (6) irrigation and drainage and water resources management; (7) agricultural waste disposal and utilization and environmental management; (8) agricultural information resources and technology; (9) agricultural instrumentation and control; (10) fishery and aquacultural resources engineering and (11) forest product resource engineering
  - l. *Agricultural Machinery Equipment and Power Units* – shall consist of all farm power and equipment for the production, processing, storage, manufacturing, reserving, transporting and distribution of agricultural, fishery, aquaculture and forestry products. It includes tractor and their attachment, power tiller, seeders, transplanters, equipment, windmill, slaughtering equipment, meat processing equipment, fishery and aquaculture and forest processing equipment, post harvest machines such as milling machine, dryer, thresher, etc., and agricultural transport machinery
  - m. *Agricultural Buildings and Structures* – shall include silos and its components, agricultural machinery and equipment sheds, farm houses, green/screen houses, poultry houses, piggery houses, slaughterhouses, farm to market roads, farm bridges, agricultural products storage/warehouses, buildings and structures for poultry, livestock and fishery production and processing, agricultural processing, kiln drying and lumber treatment structure, farm equipment, farm supplies and other structures such as self feeders, and soil and water conservation structures
  - n. *Agricultural Electrification and Energy* – shall embrace the design and installation of electric system for agriculture, conservation equipment, microhydro-electric generators and motors for the power on the farm, village level power plant including the development and operation of conventional and non-conventional energy equipment and facilities for agricultural purposes
  - o. *Agricultural Processing and Food Engineering* – shall include local activity or series of activities to maintain or raise the quality or change the form or characteristics of agricultural, fishery and forestry products. It also includes cleaning, sorting, grading, treating, drying, dehydrating, grinding, mixing, milling, canning, dressing, slaughtering freezing, pasteurizing, conditioning, packaging, repacking, transporting, etc. of agricultural, fishery and forestry products
  - p. *Soil and Water Conservation* – shall consist of management practices for small far reservoir, farm ponds, small water impoundments to include contour farming; terracing; use of erosion control structures; land conditioning, mulching, flood control, agricultural planning and surveying and agricultural meteorology
  - q. *Irrigation and Drainage and Water Resources Management* – shall include the design, construction, installation, operation and maintenance of irrigation and agricultural drainage systems, drip, sprinkler and other pressurized irrigation system; hydro-meteorology; surface and ground water resource management, irrigation structures and facilities such as dams, weirs, pump systems, conveyances, canals and flumes
  - r. *Agricultural Waste Disposal, Utilization and Environmental Management* – shall consist of the development of systems, processes and equipment for agricultural waste disposal and utilization and environmental-friendly technologies such as compost plant, biogas plant, biomass utilization technologies, systems and processes
  - s. *Agricultural Information Resources and Technologies* – shall include utilization of agricultural information systems, database and other information management tools for agricultural use, and the application of computers to agriculture
  - t. *Agricultural Instrumentation and Control* – shall include measuring instruments and control system for agricultural applications such as moisture meters, weighing scale, other metrology equipment and the like
  - u. *Fishery and Aquaculture Resource Engineering* – shall involve the design, construction, installation, operation, maintenance and management of machinery, equipment and facilities for fishery and aquaculture production, processing, transporting and marketing such as fish ponds, fish pens/cages, aerators, fish handling equipment and machinery and fish cold storage



Republic of the Philippines  
OFFICE OF THE PRESIDENT  
COMMISSION ON HIGHER EDUCATION



CHED MEMORANDUM ORDER

No. 04  
Series of 2001

SUBJECT: REVISED GUIDING PRINCIPLES AND MINIMUM  
STANDARDS FOR THE BACHELOR OF SCIENCE IN  
AGRICULTURAL ENGINEERING PROGRAM

-----X

In accordance with the pertinent provisions of Republic Act No. 7722, otherwise known as the "Higher Education Act of 1994," and by virtue of Resolution No. R4-2001 dated January 9, 2001, the attached revised Guiding Principles and Minimum Standards for the Bachelor of Science in Agricultural Engineering program are hereby adopted for information, guidance and compliance of all concerned.

Pasig City, Philippines January 19, 2001

  
ESTER ALBANO GARCIA  
Chairperson



GUIDING PRINCIPLES AND MINIMUM STANDARDS FOR  
**BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING PROGRAM**  
(Revision of CMO No. 34, Series 1998)

**I. GUIDELINES**

**A. Philosophical framework of the program**

Agricultural engineering is a discipline based on the application of engineering principles for the production and processing of food, fiber and materials of biological origin. In the Philippines, agricultural engineering still concentrates on such areas as the irrigation and drainage of agricultural land, soil erosion control, the planning of farm buildings, agricultural waste management and the development of labor-saving farm equipment and systems.

As a discipline that is continuously evolving in response to advances in information technology and bio-technology, changing market needs and policy environments, agricultural engineering is progressively challenged to further improve the efficiency of agricultural systems, and at the same time consciously reduce or eliminate environmental hazards as well as utilize agricultural waste and by-product.

Consistent with its basic nature and directional trends, agricultural engineering education revolves around the philosophy that learning is a continuously recurring process through life for which the learner shall experience and assume responsibility and control. The translation of the above premises into effective instructional resources and facilities is the ultimate responsibility of public and private institutions that offer agricultural engineering as an undergraduate degree program.

**B. Objectives of the program**

The BS Agricultural Engineering (BSAE) program aims to:

1. train students in the application of engineering principles particularly in the solution of problems related to agro-industrial development;
2. prepare them to become professionals with entry-level competencies;
3. develop appreciation in the students, of the potentials of an agricultural engineering business enterprise; and
4. instill in the students a concern for the preservation and protection of the natural environment

**C. Programs**

**I. Instruction/curriculum**

The curriculum should have a well-balanced general education and strong technical courses aimed at developing students with knowledge, skills, attitude and values.

An institution may offer the BSAE program if it is capable of satisfying the minimum requirements for the basic BSA program.



# BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING MINIMUM REQUIREMENTS

	Courses	Units	Percentage
I.	GENERAL EDUCATION	51	27
	Language and Humanities	21	
	Mathematics, Nat. Sci. and Information Technology	15	
	Social Sciences	12	
	Rizal Course	3	
II.	PREPARATORY SUBJECTS	27	15
III.	FUNDAMENTAL AGRICULTURE	15	8
	Animal Science	3	
	Crop Science	3	
	Fishery Science	3	
	Soil Science	3	
	Agricultural Entrepreneurship and Management	3	
IV.	BASIC ENGINEERING	44	24
	Engineering Mechanics	5	
	Thermodynamics and Heat Transfer *	5	
	Fluid Mechanics	4	
	Surveying	3	
	Engineering Graphics	3	
	Materials of Engineering	3	
	Introduction to Operations Research	3	
	Agricultural Engineering and Professional Ethics	1	
	Strength of Materials	3	
	Engineering Economy	3	
	Computer Applications in Engineering	6	
	Farm Shop Practice	2	
	Principles of Electricity and Electronics	3	
V.	PROFESSIONAL AGRICULTURAL ENGINEERING COURSES	42	23
	Soil and Water Resources	12	
	Agricultural Power and Machinery	9	
	Agricultural Processing, and Electrification	9	
	Agricultural Structures and Environment	12	
VI.	THESIS/ FIELD PRACTICE	6	3
VII.	UNDERGRADUATE SEMINAR	1	1
VIII.	PHYSICAL EDUCATION	(8)	
IX.	MILITARY SCIENCE	(6)	
		<hr/> 186	

\* can be taken as one course with 5 units or separately at 3 units each.



## BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

Courses	Units	
I. GENERAL EDUCATION		51
A. Language and Humanities		21
<u>English</u>		
1. Communication Skills I	3	
2. Communication Skills II	3	
<u>Filipino</u>		
1. Kasanayan sa Komyunikasyon	3	
2. Poklorikong Pilipino	3	
<u>Humanities</u>		
1. Humanities I - Literature, Man and Society	3	
2. Humanities II - Art, Man and Society	3	
3. Humanities III - Introduction to Philosophy and Logic	3	
B. Mathematics, Natural Science and Information Technology		15
<u>Mathematics</u>		
1. Algebra	3	
2. Plane Trigonometry	3	
3. Introduction to Computer Science	3	
<u>Natural Sciences</u>		
1. Biology	3	
2. Inorganic Chemistry	3	
C. Social Sciences		12
1. Introduction to Behavioral Science	3	
2. Principles of Government, Politics and Constitution	3	
3. Principles of Economics	3	
4. Rural Sociology and Institutions	3	
D. Philippine Institution (Life and Works of Rizal)		3
II. PREPARATORY COURSES		27
1. Speech Communication*	3	
2. Scientific and Technical Writing	3	
3. Analytic Geometry and Calculus I	3	
4. Analytic Geometry and Calculus II	3	
5. Analytic Geometry and Calculus III	3	
6. Elementary Statistics	3	
7. Organic Chemistry	3	
8. General Physics I	3	
9. General Physics II	3	

\* Or any of the following: Business English; Technical English or World Literature; Philippine Regional Literature; Asian Literature; Third World Literature.



I. FUNDAMENTAL AGRICULTURE	15
1. Animal Science	3
2. Crop Science	3
3. Fishery Science	3
4. Soil Science	3
5. Agricultural Entrepreneurship and Management	3
IV. BASIC ENGINEERING	44
1. Engineering Mechanics	5
2. Thermodynamics and Heat Transfer	5
3. Fluid Mechanics	4
4. Surveying	3
5. Engineering Graphics	3
6. Materials of Engineering	3
7. Introduction to Operations Research	3
8. Agricultural Engineering Law and Professional Ethics	1
9. Strength of Materials	3
10. Engineering Economy	3
11. Computer Applications in Engineering	6
12. Farm Shop Practice	2
13. Principles of Electricity and Electronics	3
V. PROFESSIONAL AGRICULTURAL ENGINEERING COURSES	42
<u>Soil and Water Resources</u>	12
1. Irrigation and Drainage Engineering	3
2. Soil and Water Conservation	3
3. Hydrology	3
4. Aquaculture Engineering	3
<u>Farm Power and Machinery</u>	9
1. Agricultural Mechanization and Machine Management	3
2. Agricultural Power and Energy Sources	3
3. Agricultural Machinery Design	3
<u>Agricultural Processing and Electrification</u>	9
1. Farm Electrification	3
2. Agricultural Processing and Handling	3
3. Refrigeration Engineering	3
<u>Agricultural Structures and Environment</u>	12
1. Agricultural Waste Management	3
2. Farm Structures Engineering	3
3. Design and Management of Farm Structures	3
4. Forest Products Engineering	3
VI. THESIS/FIELD PRACTICE *	6
VII. UNDERGRADUATE SEMINAR	1
VIII. PHYSICAL EDUCATION	(8)
IX. MILITARY SCIENCE	(6)
	<hr/> 186

\* An option is given to the student to take either six units of thesis or field practice