6. ＴＵＰ工学部便覧（英文）

ENGINEERING CATALOGUE

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

MANILA

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TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

MANILA

UNIVERSITY OFFICIALS

BOARD OF REGENTS:

HON. ONOFRE D. CORPUZ (Minister of Education and Culture)	Chairman
DR. JOSE R. VERGARA (President, T.U.P.)	Vice-Chairman
HON. BIENVENIDO G. VILLAVICENCIO (Director, External Assistance Staff, NEDA)	Member

DR. JOSE R. VERGARA
President

MR. BAYANI I. GUTIERREZ
Vice President for Administration and Development

DR. GALICANO J. DATU
Vice President for Academic Affairs

DR. BERNARDO F. ADIVISO
College Deav

DR. ILUMINADA G. ESPINO
Dean of Graduate Studies

DR. ERLINDA F. MANALANG
Director of Research and Development

MRS. ROSALINDA S. PAPA
Director of Academic Services

DEPARTMENT HEADS

Architecture and Fine Arts	DIOSDADO C. NICDAO JR.
Engineering	ROBERTO N. HUANG
High School	CARLOS Q. TRINIDAD
Teacher Education	TEOFILO A. SISON
Technical/Technician	VIRGILIO V. GUNGON

AREA CHAIRMEN

B.S.I.E.	ALBERTO F. POBLETE
Civil Technology	SAVALFRAN S. SEALTIEL
Electrical/Electronics	FERNANDO S. ALFONSO
Languages	FRANCISCA A. APILADO
Math and Sciences	PERLA S. ROXAS
Mechanical (RAC, AUTO, SME)	AMANDO G. PARIS
Metal Trades	ANTONINO M. LASAM
Physical Education	ELIZABETH S. ASINAS
Social Sciences	RODOLFO Y. BAKING

ADMINISTRATIVE STAFF

Personnel Officer	TERESITA R. BATANES
Accountant	PABLO D. TOMELDEN
Auditor	ASUNCION C. NAVARRO
Cashier	HIPOLITO C. DIAMANTE
Supply Officer	ALFONSO Z. DE LOS REYES
Budget Officer	CONRADO M. CARMONA
Guidance and Counselling Services	MARILOU B. MORALES
	ANNE BOLYN C. MAZA
	ELEANOR D. LEONEN
Library	ESTHER T. GUTIERREZ
Registrar	BASILISA O. PALMIANO
Civil Security	JORGE T. DAGUM
Medical & Dental Clinic	VENUSTO C. DE LA ROSA
	AMBROSIO A. SINGSON

ENGINEERINC FACULTY

ROBERTO N. HUANG, Head	BSME (registered), Metal Works Engineering MBA Candidate
NENET T. COTONER	BSChE (registered), BSCompE (candidate)
ALFREDO G. PACIO	BSIE (Math Major), MS Math, BSCompE (candidate)
SONIA C. MANALASTAS	BSChem (registered), MAT Chem
JESUS C. MANALASTAS	BSIE, BSCE
PERLITA C. LUCENA	BSChE
MARCELINO R. GARCIA	BSCE, BSEnSE (candidate)
ISAGANI I. GARCIA	BSME (registered)

GENEROSO P. MAGBANUA	BSEE (registered)
DANILO A. FEDERIZO	BSCE (registered), MBA (candidate) HYDROLOGY, U.S.A.
BEXINECIO T. TALANIA	BSME (registered), Inventor, Energy Saving Devices
ARNULFO E. SAMACO	BSRECE (registered ECE), Instrumentation Training U.S.A.
EDUARDO L. MONTAS	BSIE, BSME (candidate)
ELPIDIO F. BALAIS	BSIE (Drafting)
LORENZO F. TEMPLONUEVO	BSIE (Drafting)
DOMINGO R. RAPING	BSIE, MAIE
MANUEL I. PELONIA	BSIE
ANTONIO D. ALEGRIA	BSIE
MANUEL A. SALAZAR	BSIE, MAIE (candidate)
CENON C. ARRIETA II	BSIE
EMILIO S. MALELANG	BSIE
IRENEO B. BALANGUE	BSIE

HISTORY:

Established in 1901 by Act No. 74 of the Philippine Commission, the Philippine College of Arts and Trades was originally known as the Manila Trade School, and later, as the Philippine School of Arts and Trades.

The first four-year collegiate curriculum for industrial teacher education leading to the Degree of Bachelor of Science in Industrial Education was offered in 1951-1952 with shopwork and industrial arts as the major subjects.

In 1959, when the Philippine School of Arts and Trades by operation of Republic Act No. 2237, the College opened its Graduate School offering courses leading to the Degree of Master of Arts in Industrial Education.

In 1967, the college began to offer industrial technician education and Technician courses in Civil Technology, Electronics Technology, Mechanical Technology, and Refrigeration and Airconditioning Technology.

On June 11, 1978, it became the Technological University of the Philippines by Presedential Decree No. 1518, In 1979, the University began to offer 5-years B.S. Engineering Courses in Civil, Electrical and Mechanical Engineering.

UNIVERSITY OBJECTIVES:

1. To provide higher and advanced vicational, technical, industrial, technological and professional education and training in the industries and technology, and practical arts, leading to certificates, diplomas and degrees.

2. To provide progressive leadership in applied research, developmental studies in technical, industrial and technological fields and production using indigenous materials, effect technology transfer in the countryside; and

3. To assist in the development of small and medium scale industries in identified growth-center.

ENGINEERING DEPARTMENT:

The Department of Engineering, in accordance with the above main thrusts of the University, prepares students intellectually, socially, morally and professionally for the constantly changing demands of the engineering career.

It offers courses based on the latest and most advanced engineering requirements, in order that the students will be kept abreast with modern technological advancements in the field of engineering.

ENGINEERING CURRICULUM:

The Engineering Courses offered at TUP are so structured that theories are supported with Practicum thru the shop courses from the first year to the fifth year. With this design, a student will be equipped with specific skills after completion of one year or so, which will prepare him for an occupation/ job. It differs from the traditional Engineering Curriculum primarily because it is a blend of Skills-Knowledge Mix.

There are two programs under the Engineering Curriculum. One program is for entering first year engineering students who get a technician certificate at the end of their third year and an engineering diploma at the end of their fifth year. The other program is intended to serve the needs of our technical and technician graduates who opt to go further, beyond their two-year or three-year certificate.

DESCRIPTION OF COURSES

CIVIL ENGINEERING:

The course covers all phases of Civil Engineering, with emphasis on the design and construction of roads, bridges, buildings and other public works; topographic and hydrographic surveying necessary for land surveys, lot subdivision road and railroad location, study of hydraulics for water supply, irrigation drainage, and flood control, post works facilities, share protection, bank investments, and river control, sanitary and municipal engineerings, laying stress on sewage dispossal treatment, masonry foundations and soil mechanics, testing of materials of construction, etc.

ELECTRICAL ENGINEERING:

The course covers an over-all understanding of the basic principles of electrical engineering and its allied branches, computer electronics, and communications, etc. to develop for the students to meet practical engineering problems from commercial and technical grounds.

MECHANICAL ENGINEERING:

The course includes a substantial foundation of basic sciences, different elements and kinetics of machines, thermodynamics of gases and vapors, construction and operation of mechanical prime-movers like the different kinds of engines, manufacture of engineering materials, designing of machine-elements, power-plant engineering, industrial processes, electrical machineries, refrigeration and air conditioning systems, fundamentals of electronics, computers, and nuclear engineering.

GENERAL INFORMATION AND REGULATIONS

I. ADMISSION REQUIREMENTS

A. Entering First Year Engineering Students Criteria:
   1. Qualify NCEE (85% ile rank - GSA)
   2. High School GPA - 80 up
   3. Qualify in TUP Selective Exam
   4. Qualify in Personal Interview

B. Entering Third Year Engineering (Technician graduates)
   1. No failing grade in any subject
   2. GPA in Major course - not lower than 2.5
   3. Qualify in NCEE (GSA - 85% ile rank)
   4. If a Graduate Technician with Industrial experience:
      a. Qualify in NCEE (GSA - 85% ile rank)
      b. Conditional acceptance/probation for one (1) semester

C. Transferees: From Engineering Schools
   1. No failure in any subject and grade of 2.0 in major subjects.
   2. Admit only entering students from 1st to 2nd year.

II. ADVISING:

At registration, it is mandatory for all students to seek course advisement in order to prepare their individual programs. Details about registration procedures are distributed freely during the enrollment period.

During the school term the Department Head is available for consultation at regularly scheduled office hours.

Because advise is always available upon request, responsibility for errors in individual program rests with the student. Each student must assume responsibility for his progress by keeping an up-to-date record of the course he has taken.

Counselling services regarding personal problems of a vocational or emotional nature are available to all students who seek them voluntarily at the Guidance and Counselling Center. Various tests, as part of a total counselling program, can be provided depending upon the requirements and desires of the students.

III. TUITION AND OTHER FEES:

DAY Program

(A)	Tuition Fee	₱120.00
(B)	Miscellaneous Fees	₱ 5.00
	Registration Fee	₱ 5.00
	Student Privilege Fee	₱ 5.00
	Laboratory Fee	₱ 5.00/subject
	Medical and Dental Fee	₱ 5.00
	Athletic Fee	₱ 5.00
	Library Fee	₱ 5.00
	I.D.	₱ 3.45
	Total	₱153.45

EVENING Program

Shopwork	₱ 70.00
Drawing or Laboratory Courses	₱ 20.00
Academic Subjects	₱ 6.00/unit
P.E. Subjects	₱ 10.00
Miscellaneous Fees	
Registration Fee	₱ 5.00
Laboratory Fee	₱ 5.00/subject
Student Privilege Fee	₱ 5.00
Library Fee	₱ 5.00
Medical and Dental Fee	₱ 5.00
Athletic Fee	₱ 5.00
I.D.	₱ 3.45

Mode of Payments:

50%	Tuition plus other fees payment upon enrollment.
25%	Before Semi-Final Exams.
25%	Before Final Exams.

IV. SCHOLARSHIPS:

SCHOLARSHIPS AVAILABLE FOR COLLEGE STUDENTS ENROLLED AT THE TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

1. Full Scholarship (100% discount on tuition fee only) to veledictorian graduated from any recognized secondary school with at least 40 graduates. (Bd. Res. #44, s. 1960)

2. Partial Scholarship (50% discount on tuition fee only) to salutatorian graduated from any recognized secondary school with at least 40 graduates. (Bd. Res. #45, s. 1960)

3. College student with excellent deportment carrying a prescribed load who obtained an average of between 1.00 to 1.35 shall be entitled to the privilege mentioned in number (1) and those who obtained an average between 1.36 to 1.60 shall be entitled to the privilege mentioned in number (2). (Bd. Res. #45, s. 1960)

4. Selected Athletes of the college shall enjoy 100% discount on tuition fee only for a period of one school year. (Bd. Res. #1720, s. 1977)

5. The members of the college dance troupe and of the college rondalla shall enjoy 100% discount on tuition fee only for a period of one school year. (Bd. Res. #1751, s. 1977)

6. Full scholarship (100% discount on tuition fee only) to the editor-in-chief) and partial scholarship (25-50% discount on tuition fee only) to associate editors, managing editors and other members of the staff of the Philippine Artisan. (Bd. Res. #1778, s. 1966)

7. Full scholarship (100% discount on tuition fee only) to cadet officers on condition that they are not recipients of any other scholarship offered in the college for that academic year. In such a case, however, the amount equivalent to the scholarship grant shall be paid to the said cadet officers in the form honorarium who will work as ROTC student assistant. (Bd. Res. #505, s. 1965)

8. Full scholarship (100% discount on tuition fee only) to the 1st place and partial scholarships (50% discount on tuition only) to the 2nd, 3rd, 4th, and 5th places to five examinees who shall top the entrance examinations given by the college for the BSIE and Technical Education courses for a period of one semester. (Bd. Res. #1054, s. 1969)

REQUIREMENTS/CRITERIA:

Institutionally Funded:

1. The student carries a full load (at least 18 units).

2. The student must not incur a failing mark in anyone of his subjects.

3. The student must not be involved in any degrees of misconduct (public scandal) while in attendance at TUP.

4. The student must be in good physical and mental condition.

Privately Funded:

1. The student must carry a full load of at least 18 units per semester.

2. The students must not incur a failing mark in anyone on his subjects.

3. The student must not be involved in any degree of misconduct while in attendance in TUP.

4. The student must be in good physical and mental condition.

5. The students must be economically needy, i.e. his family has a gross income of not more than ₱6,000.00 annually.

6. The student must pass the scholarship screening test and interview to be conducted by the scholarship committee.

V. CREDIT:

The relative unit of credit is the semester hour. One lecture or recitation hour a week for one semester equals one semester hour or unit. Three laboratory hours are counted as equivalent to one unit. Since the regular semester extends through 18 weeks, the semester-hour consists of 54 hours of formal classroom instruction and examinations. The summer

term also provides this same number of classroom hours.

Credit is given only to subjects validly enrolled, not in excess of the regular load, followed in the prescribed sequence, and successfully passed.

The proper sequence of subjects is indicated in the pages printing the detailed curricula and in the sections describing the courses.

VI. ADDING, CHANGING SUBJECTS:

A student may add or change a subject not later than the second week of the semester. For such subjects to receive credit they must be added or changed:

1. Upon consultation with the Dean or Head of the Department,

2. With the approval of the Registrar,

3. Reporting them on the appropriate from to the accounting office within the period allowed for the revision of the semestral load, that is not later than the second week of the semester.

VII DROPPING SUBJECTS:

All droppings-out of subjects must be acknowledged by the respective Dean and professor and be officially reported to the Registrar by filing the appropriate from, otherwise such subjects are considered as failed and are so recorded in the student permanent record book.

Subjects officially dropped during the period, allowed for the revision of load do not either appear in the student's permanent record or carry any connotation of quality of student performance.

A subject is considered officially dropped when the respective professor, the Dean or Head and the Registrar are notified about it by finling the official form.

Subjects offically dropped after the enrollment period but before the mid-term examination are given a grade of "dropped".

Subjects unofficially dropped at any time during the school term are considered failures and marked "5.0".

According to the Manual of Regulations of the M.E.C. a student may drop a subject and be entitled to the corresponding refund only during the first two weeks of classes of a regular semester. The effective date of the dropping, as for as refunds and grades are concerned, is the date the form is filed in the Registrar's Office.

VIII. CONDUCT AND DISCIPLINE:

The following are behavioral patterns expected of every student of the University. Any deviation there-from may be considered as ground for disciplinary action.

Sec. 1 Qualified Standard Behavior of Students:

1. Come to University properly groomed; neat, clean, decent clothing, orderly, respectful, and courteous in conduct.
2. Refrain from using language and committing acts that are disrespectful, vulgar, or indecent or which in any manner may cause molestation to other students, faculty members, employees or official of the administration of the University.
3. Shall not bring objects, pictures or literatures that are morally offensive.
4. Shall not write or draw graffiti on blackboards, walls, tables, chairs of desk indecent or lewd words or figures; neither shall they curve not write on any property of the University letters, words, and figures.
5. Shall not damage any property of the University.
6. Shall no carry any deadly weapon or explosive of any kind, whether cancelled or openly, nor shall threaten to use such weapons within the university premisses on the occasion of any university activities.
7. Shall not throw waste papers and other rubbish except into thrush boxes or cans or spit except into spittons or like receptables.
8. Shall not intentionally disturb classes.
9. Shall attend classes regularly and punctually.
10. Shall leave the room quietly and in an orderly manner.
11. Shall enter a recitation room only after the outgoing class has left the room.

12. Shall observe proper decorum inside a classroom, especially so when the class is going on,
13. Shall leave the classroom only when permission is granted by the teacher/instructor/professor.
14. Shall not smoke in classroom, corridors or lobby.
15. Shall refrain from loitering and making noise in the corridors and lobby.
16. In programs, convocations, etc., shall not leave the hall while a speach or a performance is in progress.
17. Shall attend social functions in clothing appropriate for the occasions.
18. Shall conduct himself herself in a manner becoming of a gentlemen/lady.
19. Shall always wear his/her ID at all times while within the university campus.

Sec. 2 In the Library:

1. Borrowers card are non-transferable.
2. Shall observe strict silence at all times.
3. Shall not eat or smoke.
4. Shall observe rules on borrowing reserved books, circulation books, pamphletes and yearbooks, magazines, newspapers and overnight books.
5. Help keep the library clean at all times.
6. Observe library clean at all times.
7. Refrain from mutilating, defacing or tearing books, pamphlets, magazines and other library materials.

Sec. 3 In the Campus:

1. Shall not hold, join or directly or inderectly incite rallies, demonstrations, and other forms of group actions to create disturbance.
2. Shall not post, distribute leaflets undermining the government and educational institutions.
3. Shall not disrupt campus peace.
4. Shall not allow himself/hereself to be listed as members in any book or list, records correspondence, or any other documents of the organization that are subversive.

5. Shall not act as agent, courier, messenger, correspondent organizer, or in any other capacity on behalf of such organization or association.
6. Shall not mail, circulate, distribute, or deliver to other persons, any material propaganda of any kind on behalf of such association or organization.
7. Shall refrain from committing acts that may embarrass the university or bring dishonor to it.
8. Shall refrain from holding meetings in the campus without due permission from the office of the Dean of Students.
9. Shall refrain from coming to school, under the influence of liquor or of any of the prohibited drugs.

Sec. 4 Teacher - Student Relationship:

In school, teachers shall act in loco parentis to student. Teacher-Student relationship in school follows a pattern similar to that of parents and their children in the home. When in school, students must look up to their teachers as their second parents. Students are duty-bound to respect and obey their teachers as they would their parents. In the same token, teachers are expected to look to their students as if they were their own children.

BSCE - CT

(CIVIL ENGINEERING)

First Year — First Semester

		Subjects	Credit/Units
MATH	114	College Algebra	4
MATH	113	Plane & Spherical Trigonometry	3
CHEM	113	General Chemistry I	3
CHEM	111 L	General Chemistry I Lab	1
DRAW	111 D	Engineering Drawing I	1
ENGL	113	Fundamentals of Technical English	3
PSYCHO	113	General Psychology	3
CT	114 P	Civil Technology I	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

First Semester		Second Semester Subjects	Credit/Units
MATH	123	Analytic Geometry	3
PHYS	123	Physics I	3
PHYS	121 L	Physics I Lab	1
CHEM	123	Chemistry II	3
CHEM	121 L	Chemistry II Lab	1
DRAW	121 D	Engineering Drawing II	1
ENGL	123	Technical Writing and Business Correspondence	3
SOCIO	123	Sociology & Family Planning	3
CT	124 P	Civil Technology II	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

NOTE:
P=Practicum
D=Drafting/Design
L=Laboratory
F=Field

MATH 114
- 1st no. stands for the year
- 2nd no. stands for the semester (odd no. for 1st semester & even no. for 2nd sem.
- 3rd no. stands for the credit units

114 means 1st year 1st sem. 4 units.

Second Year		First Semester Subjects	Credit/Units
MATH	215	Differential Calculus	5
PHYS	213	Physics II	3
PHYS	211 L	Physics II Lab	1
CHEM	213	Chemistry III	3
CHEM	211 L	Chemistry III Lab	1
ENGL	213	Speech Arts	3
DRAW	211 D	Engineering Drawing III	1
PSYCHO	213	Industrial Psychology	3
CT -	214 P	Civil Technology III	4
PE		Physical Education III	1
CMT		Citizen Military Training	1.5
			26.5 Units

Second Year		Second Semester Subjects	Credit/Units
MATH	225	Integral Calculus	2
PHYS	223	Physics III	3
PHYS	221 L	Physics III Lab	1
DRAW	221 D	Engineering Drawing IV	1
CONST	223	Philippine Constitution	3
TAX	223	Land Reform and Taxation	3
ENGL	223	Technical Literature	3
CT -	224	Civil Technology IV	4
PE		Physical Education IV	1
CMT		Citizen Military Training	1.5
			25.5 Units

Summer Term

ES - 305	Engineering Mechanics	5
SS - 303	Industrial Management	3
		8

Third Year		First Semester Subjects	Credit/Units
CE	312	Elementary Surveying	2
CE	312 F	Elementary Surveying (Field)	2
CE	313	Cost and Estimates	3
CE	332	Soil Mechanics	2
CE	352	Materials Testing	2
ES	315	Strength of Materials	5
PIL	313	Pilipino I	3
CT	314 P	Civil Technology V	4
			23 Units

Third Year		Second Semester Subjects	Credit/Units
CE	323	Prin. of Reinf. Concrete	3
SS	323	Industrial Relation	3
ES	344	Fluid Mechanics	4
PIL	323	Pilipino II	3
CT	324 P	O J T (6 weeks)	
			17 Units

Fourth Year		First Semester Subjects	Credit/Units
CE	433	Hydraulics Engineering	3
CE	413	Engineering Eco. & Accounting	3
CE	412	Higher Surveying (Lect.)	2
CE	412 F	Higher Surveying (Field)	2
EE	412	Electrical Circuits	2
EE	411 L	Electrical Circuits Lab.	1
ME	413	Mechanical Engineering I	3
SPAN	413	Spanish I	3
			19 Units

Fourth Year		Second Semester Subjects	Credit/Units
CE	442	Foundations	2
CE	423	Engineering Materials & Geology	3
CE	422	Highway and Railway Curves	2
CE	422 F	Highway and Railway Curves (Field)	2
CE	424	Theory of Structure	4
CE	421 D	Theory of Structure (Design)	1
EE	422	Electrical Mach. & Control	2
EE	421 L	Electrical Mach. & Control Lab	1
ME	423	Mechanical Engineering II	3
SPAN	423	Spanish II	3
			23 Units

Fifth Year		First Semester Subjects	Credit/Units
MATH	513	Differential Equation	3
CE	512	Earthwork Engineering	2
CE	512 F	Earthwork Engineering (Field)	2
CE	513	Highway and Traffic Engineering	3
CE	512	Timber Design	2
CE	511 D	Timber Design (Design)	1
CE	514	Steel Design	4
CE	531 D	Steel Design (Design)	1
CE	532	Water Supply Engineering	2
CE	552	Sewerage and Sewage Disposal	2
SPAN	513	Spanish III	3
			25 Units

Fifth Year — Second Semester

		Subjects	Credit/Unit
CE	521	Safety Engineering & Maintenance	1
CE	523	Contracts, Specs. & Prof. Ethics	3
CE	522	Construction Methods & Eqpt.	2
CE	543	Elements of Environmental Eng'ng	3
CE	563	Earthquake Engineering	3
CE	542	Irrigation	2
CE	524	Reinforced Conc. Des. (Lect.)	4
CE	521 D	Reinforced Conc. Des. (Design)	1
SPAN	523	Spanish IV	3
RIZAL		Rizal Course	3
			25 Units

BSEE - ET

(ELECTRICAL ENGINEERING)

First Year — First Semester

		Subjects	Credit/Units
MATH	114	College Algebra	4
MATH	113	Plane & Spherical Trigonometry	3
CHEM	113	General Chemistry I	3
CHEM	111 L	General Chemistry I Lab	1
DRAW	111 D	Engineering Drawing I	1
ENGL	113	Fundamentals of Technical English	3
PSYCHO	113	General Psychology	3
ET	114 P	Electrical Shop Practice I	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

First Year		Second Semester Subjects	Credit/Units
MATH	123	Analytics Geometry	3
PHYS	123	Physics I	3
PHYS	121 L	Physics I Lab	1
CHEM	123	Chemistry II	3
CHEM	121 L	Chemistry II Lab	1
DRAW	121 D	Engineering Drawing II	1
ENGL	123	Technical Writing and Business Correspondence	3
SOCIO	123	Sociology & Family Planning	3
ET	124 P	Electrical Shop Practice II	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

NOTE: P = Practicum L = Laboratory
D = Drafting/Design F = Field

Second Year		First Semester Subjects	Credit/Units
MATH	215	Differential Calculus	5
PHYS	213	Physics II	3
PHYS	211 L	Physics II Lab	1
CHEM	213	Chemistry III	3
CHEM	211 L	Chemistry III Lab	1
DRAW	211 D	Engineer-ng Drawing III	1
ENGL	213	Speech Arts	3
PSYCHO	213	Industrial Psychology	3
ET	214 P	Electrical Practice III	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			26.5 Units

Second Year		Second Semester Subjects	Credit/Units
MATH	223	Integral Calculus	3
PHYS	223	Physics III	3
PHYS	221 L	Physics III Lab	1
DRAW	221 D	Engineering Drawing IV	1
CONST	223	Philippine New Constituion	3
TAX	223	Taxation and Land Reform	3
ENGL	223	Technical Literature	3
ET	224 P	Electrical Practice IV	4
PE		Physical Education	1
CMT	Citizen Military Training		1.5
			25.5 Units

O.J.T. - 240 Hours - Summer

Third Year		First Semester Subjects	Credit/Units
MATH	313	Differential Equation	3
ES	315	Engineering Mechanics	5
ES	313	Engineering Materials and Geology	3
ES	312	Kinematics and Machine Elements	2
ES	311 D	Kinematics and Machine Elements (Drafting)	1
PIL	313	Pilipino I	3
SS	313	Industrial Management	3
ET	314 P	Electrical Shop Practice V	4
			24 Units

Third Year		Second Semester Subjects	Credit/Units
MATH3	323	Advance Engineering Mathematics	3
ES	325	Strength of Materials	3
EE	322	Nuclear Physics	2
ES	323	Fluid Mechanics	3
ECE	323	Electronics I	3
PIL	323	Pilipino II	3
SS	323	Industrial Relations	3
ET	324 P	Electrical Shop Practice VI	4
			24 Units

Fourth Year		First Year Subjects	Credit/Units
EE	434	Thermodynamics I	4
EE	413	#ng'g Economics & Accounting	3
EE	414	Elect. Machinery I	4
ME	412 L	Mechanical Engineering I Lab	2
ME	412	Hydraulics Machines	2
ECE	413	Electronics II	3
SPAN	413	Spanish I	3
			21 Units

Fourth Year		Second Semester Subjects	Credit/Units
EE	444	Thermodynamics II	4
EE	424	Elect. Machinery II	4
EE	423	Elect. Transients	3
EE	443	Computer Programming	3
EE	421	Machine Foundation	1
ME	422 L	Mechanical Engineering II Lab	2
SPAN	423	Spanish II	3
			20 Units

Fifth Year		First Semester Subjects	Credit/Units
EE	533	Contracts, Specs., Eng'g Laws and Ethics	3
EE	513	Electrical Equipments	3
EE	511	Elect. Equipts. & Machine Design	1
EE	511 D	Elect. Equipts. & Machine Design (Design)	1
EE	531 F	Seminars & Field Trips (Field)	1
EE	512 L	Elect. Engineering I Lab	2
ECE	514	Electronics & Elect. Communication	4
ECE	511 L	Electronics & Elect. Communication Lab	1
SPAN	513	Spanish III	3
RIZAL		Rizal	3
			22 Units

Fifth Year — Second Semester

		Subjects	Credit/Units
EE	523	Electric Power Plant Engineering	3
EE	521 L	Electric Power Plant Eng'g Lab	1
EE	543	Elect. Power Trans. & Distribution	3
EE	541 L	Elect. Power Trans. & Distribution Lab	1
EE	522	Industrial Electronics	2
EE	561 L	Industrial Electronics Lab	1
EE	522 L	Elect. Engineering II Lab	2
EE	521	Illumination & Wiring Design	1
EE	581 L	Illumination & Wiring Lab	1
SPAN	523	Spanish IV	3
			18 Units

BSME - MT

(MECHANICAL ENGINEERING)

First Year — First Semester

		Subjects	Credit/Units
MATH	114	College Algebra	4
MATH	113	Plane and Spherical Trigonometry	3
CHEM	113	General Chemistry I	3
CHEM	111 L	General Chemistry I Lab	1
DRAW	111 D	Engineering Drawing I	1
ENGL	113	Fundamentals of Technical English	3
PSYCHO	113	General Psychology	3
MT	114 P	Machine Tool Processes I	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

First Year — Second Semester

		Subjects	Credit/Units
MATH	123	Analytic Geometry	3
PHYS	123	Physics I	3
PHYS	121 L	Physics I Lab	1
CHEM	123	Chemistry II	3
CHEM	121 L	Chemistry II Lab	1
DRAW	121 D	Engineering Drawing II	1
ENGL	123	Technical Writing & Bus. Corres.	3
SOCIO	123	Sociology and Family Planning	3
MT	124 P	Machine Tool Processes II	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			24.5 Units

NOTE: P = Practicum L = Laboratory
D = Design/Drafting F = Field

Second Year — First Semester

		Subjects	Credit/Units
MATH	215	Differential Calculus	5
PHYS	213	Physics II	3
PHSY	211 L	Physics II Lab.	1
CHEM	213	Chemistry III	3
CHEM	211 L	Chemistry III Lab.	1
DRAW	211 D	Engineering Drawing III	1
ENGL	213	Speech Arts	3
PSYCHO	213	Industrial Psychology	3
MT	214 P	Machine Tool Processes III	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			26.5 Units

Second Year		Second Semester Subjects	Credit/Units
MATH	225	Integral Calculus	5
PHYS	223	Physics III	3
PHYS	221 L	Physics III Lab	1
DRAW	221 D	Engineering Drawing IV	1
ENGL	223	Technical Literature	3
CONST	223	Philippine Constituion	3
TAX	223	Taxation and Land Reform	3
MT	224 P	Machine Tool Processes IV	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			25.5 Units

O.J.T. - 240 Hours - Summer

Third Year		First Semester Subjects	Credit/Units
MATH	313	Differential Equation	3
ES	315	Mechanics	5
ES	313	Engineering Materials & Geology	3
EE	313	Electrical Circuits	3
EE	311 L	Electrical Circuits Lab	1
PIL	313	Pilipino I	3
SS	313	Industrial Management	3
MT	314 P	Machine Tool Processes V	4
			25 Units

Third Year		Second Semester Subjects	Credit/Units
ES	325	Strength of Materials	5
ES	324	Thermo I	4
ES	322	Kinematics & Machine Elements	2
ES	321 D	Kinematics & Machine Elements (Drafting)	1
ES	343	Fluid Mechanics	3
PIL	323	Pilipino II	3
SS	323	Industrial Relations	3
MT	324 P	(Machine Tool Processes) VI	4
			25 Units

Fourth Year		First Semester Subjects	Credit/Units
ME	414	Thermo II	4
ME	412 L	Mechanical Engineering I Lab	2
ME	433	Hydraulics/Pneumatics	3
ME	431 L	Hydraulics/Pneumatics Lab	1
ME	432	Nuclear Physics	2
EE	413	Electrical Machinery & Control	3
EE	411 L	Electrical Machinery Lab	1
CE	411	Elementary Surveying	1
CE	411 F	Elementary Surveying (Field)	1
SPAN	413	Spanish I	3
			21 Units

Fourth Year		Second Semester Subjects	Credit/Units
ME	423	Refrigeration and Airconditioning System	3
ME	463	Internal Combustion Engine	3
ME	422 L	Mechanical Engineering II Lab	2
ME	442	Nuclear Power Engineering	2
ME	462	Machine Design I	2
ME	482	Safety & Maintenance Engineering	2
ECE	422	Basic Electronics	2
ECE	421 L	Basic Electronics Lab	1
SPAN	423	Spanish II	3
			21 Units

Second Year		First Semester Subjects	Credit/Units
MATH	215	Differential Calculus	5
PHYS	213	Physics II	3
PHYS	211 L	Physics II Lab	1
CHEM	213	Chemistry III	3
CHEM	211 L	Chemistry III Lab	1
DRAW	211 D	Engineering Drawing III	1
ENGL	213	Speech Arts	3
PSYCHO	213	Industrial Psychology	3
RAC	214 P	Refrigeration Processes III	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			26.5 Units

Second Year		Second Semester Subjects	Credit/Units
MATH	225	Integral Calculus	5
PHYS	223	Physics III	3
PHYS	221 L	Physics III Lab	1
DRAW	221 D	Engineering Drawing IV	1
ENGL	223	Technical Literature	3
CONST	223	Philippine Constitution	3
TAX	223	Taxation and Land Reform	3
RAC	224 P	Refrigeration Processes	4
PE		Physical Education	1
CMT		Citizen Military Training	1.5
			25.5 Units

O.J.T. - 240 Hours - Summer

Third Year		First Year Subjects	Credit/Units
MATH	313	Differential Equation	3
ES	315	Mechanics	5
ES	313	Engineering Materials & Geology	3
EE	313	Electrical Circuits	3
EE	311 L	Electrical Circuits Lab	1
PIL	313	Pilipino I	3
SS	313	Industrial Management	3
RAC	314 P	Air Conditioning Processes I	4
			25 Units

Third Year		Second Semester Subjects	Credit/Units
ES	325	Strength of Materials	5
ES	324	Thermodynamics I	4
ES	322	Kinematics & Machine Elements	2
ES	321 D	Kinematics & Machine Elements (Drafting)	1
ES	343	Fluid Mechanics	3
PIL	323	Pilipino II	3
SS	323	Industrial Reltions	3
RAC	324 P	Air Conditioning Processes II	4
			25 Units

Fourth Year		First Semester	
		Subjects	Credit/Units
ME	414	Thermodynamics II	4
ME	412 L	Mechanical Engineering I Lab	2
ME	433	Hydraulics/Pneumatics	3
ME	431 L	Hydraulics/Pneumatics Lab	1
ME	432	Nuclear Power Physics	2
EE	413	Electrical Machinery & Control	3
EE	411 L	Electrical Machinery Lab	1
CE	411	Elementary Surveying	1
CE	411 F	Elementary Surveying (Field)	1
SPAN	413	Spanish I	3
			21 Units

Fourth Year		Second Semester	
		Subjects	Credit/Units
ME	423	Refrigeration & Air Conditioning System	3
ME	463	Internal Combustion Engine	3
ME	422 L	Mechanical Engineering II	2
ME	442	Nuclear Power Engineering	2
ME	462	Machine Design I	2
ME	461 L	Machine Design I Lab	1
ME	482	Safety & Maintenance Engineering	2
ECE	422	Basic Electronics	2
ECE	421 L	Basic Electronics Lab	1
SPAN	423	Spanish II	3
			21 Units

Fifth Year		First Semester	
		Subjects	Credit/Units
ME	514	Steam Power Engineering	4
ME	512	Machine Design II	2
ME	512 L	Machine Design II Lab	2
ME	532	Refrigeration & Air Conditioning	2
ME	511 D	Refrigeration & Air Conditioning (Design)	1
ME	532 L	Mechanical Engineering III Lab	2
ME	552	Industrial Processes	2
ME	513	Engineering Economics & Acctg.	3
SPAN	513	Spanish III	3
			22 Units

Fifth Year		Second Semester Subjects	Credit/Units
ME	523	Power Plant Design	3
ME	522 L	Power Plant Design Lab	2
ME	542	Industrial Plant Design	2
ME	541 L	Industrial Plant Design Lab	1
ME	522	Environmental Engineering	2
ME	543	Contracts, Specs., Laws and Ethics	3
ME	562	Project Study	2
SPAN	523	*Spanish* IV	3
RIZAL	523	Rizal	3
COMP	522 L	Computer Laboratory	2
			23 Units

CHEMISTRY

CHEM 113 GENERAL CHEMISTRY I

An introduction to the basic principles of inorganic chemistry stressing the modern theory of atom and its structure, orbitals and chemical bonding, chemical reactions and equations, stoichiometry and scientific measurement. A detailed discussion of the state of matter; solid, liquid and gas included in the study.

Credit: 3 units

Prerequisite: None

CHEM 111 L GENERAL CHEMISTRY LAB. I

A course which develops the laboratory skills necessary for advanced work. It includes experiments designed to acquaint student with a variety of laboratory techniques and show the use of precision methods needed in experimental chemistry to verify the veracity of the laws and fundamentals.

Credit: 1 unit

Prerequisite: Must be taken with Chem 113

CHEM 123 GENERAL CHEMISTRY II

A continuation of General Chemistry I with emphasis on the commercial importance of hydrogen and oxygen, properties of solutions, acids, bases and salts, colloidal state, reaction rates and kinetics, equilibra and reaction mechanism.

Credit: 3 units

Prerequisite: Chem 113

CHEM 121 L GENERAL CHEMISTRY LAB. II

A study which includes exercises and problems aimed to strengthen the group of chemical principles and fundamentals and a balanced blending of the description and quantitative phrases of experimental chemistry.

Credit: 1 unit

Prerequisite: Must be taken with Chem 123

CHEM 213 GENERAL CHEMISTRY III

A terminal course in General Chemistry which includes a detailed discussion of metals, metallurgy and electrochemistry together with an introduction to the basic principles of thermochemistry and nuclear chemistry.

Credit: 3 units

Prerequisite: Chem 123

CHEM 211 L GENERAL CHEMISTRY LAB. III

A course which demonstrates the laws and fundamentals learned in Chemistry classroom. It includes experiments, exercises and problems in metallurgy, electrochemistry, thermochemistry and nuclear chemistry.

Credit: 1 unit

Prerequisite: Must be taken with Chem 213

PHYSICS

PHYS 123 The course includes vectors, mechanics, both statics and dynamics, unaccelerated and accelerated motion, gravitation friction, work, energy, and power. It also includes an introduction to strength of materials, and electricity.

Credit: 3 units

Prerequisite: Math 114 , Math 113

PHYS 121 L This a laboratory course that includes both exercises and experiments required by the lecture.

Credit: 1 unit

Prerequisite: Physics 123 (Taken with the lecture)

PHYS 213 A study of temperature, heat effects, thermodynamics, and fluid mechanics.

Credit: 3 units

Prerequisite: Physics 123

PHYS 211 L — This is a laboratory course accompanying the lecture course, Physics 213.

Credit: 1 unit

Prerequisite: Physics 213 (Taken with the lecture)

PHYS 223 — A course which includes the study of wave motion, sound, light and selected topics leading to Nuclear Physics.

Credit: 3 units

Prerequisite: Physics 123

PHYS 221 L — A laboratory course that includes all exercises and experiments to strengthen the lecture course.

Credit: 1 unit

Prerequisite: Physics 223 (Taken with the lecture)

MATHEMATICS

MATH 114 — COLLEGE ALGEBRA

A course covering such comprehensive topics in Algebra as are needed to pursue successfully, courses in trigonometry, analytic geometry, and calculus.

Credit: 4 units

MATH 113 — PLANE AND SPHERICAL TRIGONOMETRY

A study of trigonometric functions, relations, identities, and formulas essential to the algebraic and logarithmic solutions of problems relating to the right triangle, oblique triangle right spherical triangle, and oblique spherical triangle.

Credit: 3 units

MATH 123 — ANALYTIC GEOMETRY

A study of point and plane vectors, polar coordinates, conics, polar coordinates, point and space vectors, surfaces and ourves, and others essential to the understanding of polar analytic geometry and geometry of space.

Credit: 3 units

Prerequisite: Math 113

MATH 215 — DIFFERENTIAL CALCULUS

A study of the basic concepts of functions, their limits and derivatives, including theory and problems involving related rates, curve plottings, maxima, calculus of vector functions and partial differentiation.

Credit: 5 units

Prerequisite: Math 123

Prerequisite: Math 123

MATH 225 INTEGRAL CALCULUS

A study of the basic concepts of indefinite, definite and improper integrals methods of integration including applications, and multiple integration.

Credit: 5 units

Prerequisite: Math 125

MATH 313/MATH 513 DIFFERENTIAL EQUATION

A study of ordinary differential equations, their formulas, solutions, and applications, including the use of Laplace transformation in the solution of differential equation.

Credit: 3 units

Prerequisite: Math 225 (Math 513-BSCE)

MATH 323 ADVANCED ENGINEERING MATHEMATICS

A review of matrices and determinants, study of the solution of different equations involving power series, with engineering applications.

Credit: 3 units

Prerequisite: Math 313

LANGUAGES

PIL 313 TEKNIKONG PAGSUSULAT AT PAGLALAHAD

Ang Pilipino 313 ay nauukol sa makateknikong pagsusulat na dapat malamanng mag-aaral sa dalubhasaang bokasyonal at teknikal. Kasama sa kursong ito ang mga pagsulat ng paglalahad, mga pamamaraang makateknikong pagsusulat, ulat at kung ano ang dapat malaman sa mabisang pagsasaliksik. May mga panukalang alpabeto at mga tuntunin sa pagbaybay na inilalakip dito. May mga katawagang tekniko na ginagamit sa silid-gawaan na dapat malaman ng mga mag-aaral sa kanilang sariling wika at ng lalong mapadali ang pagkakatuto sa gawain

Credit: 3 units

PIL 323 BABASAHING PAMPANITIKAN PARA SA TEKNIKONG PAG-AARAL (Panitikan ng Pilipino)

Ito'y pag-aaral ng Pampanitikang Pilipino mula bago dumating ang mga kastila hanggang sa kasalukuyang panabon. Ang Panitikang pag-aaralang sinulat ng mga bantog na manunulat sa Pilipino. Sa katiyakang ang mga gawain ay

ginawa upang mapukaw ang mga kawilihan at malinang ang pagmamahal sa bayan. Binibigyan diin ang kultura ng Pilipino.

Credit: 3 units

SPAN 413 SPANISH 1

The course is designed to acquaint the students with the study of the fundamental elements of the Spanish language through the functional study of the articles, nouns, adjective, pronouns, adverbs, and the simple tenses of common regular and irregular verbs in thc indicative mood. The emphasis is given on the development of the listening-speaking skills through practical conversation lessons and simple short stories.

Credit: 3 units

SPAN 423 SPANISH II

The course with brief review of Spanish 101, especially the forms and the uses of the four simple tenses in the indicative mood. It covers the study of the indication mood, including reflexive and reciprocal verbs.

Credit: 3 units

SPAN 513 SPANISH III

The course includes the review of grammar through conversation, short stories and practical exercises. It covers the study of the subjective mood including the imperative and potential phrases. A study of the social, official and business letters is also included.

Credit: 3 units

SPAN 523 SPANISH IV

The course deals with the study of the life of famous Filipino heroes, writer, and poets, and their literary works designed to unculcate in the students moral values and virtues and the spirit of nationalism and patriotism.

Credit:

ENGL 113 FUNDAMENTALS OF TECHNICAL ENGLISH

A basic course in English which briefly reviews major grammar tenets and presents the technical style as distinguished from other style. In preparation for a more advance technical writing, technical description and technical exposition.

Credit: 3 units (3 hours a week)

ENGL 123 TECHNICAL WRITING AND BUSINESS CORRESPONDENCE

The course is designed to prepare technological and engineering students for the communication processes in science, business and industry. It presents education as well as authentic materials aimed at familiarizing students with various technical report business communications and highly technical forms.

Credit: 3 units

ENGL 213 SPEECH ARTS FOR TECHNICAL STUDENTS

This course is specifically designed to meet the oral communication requirement in business, science and technology: conversation, interview, group discussion and parliamentary procedures. It prepare students for personal, interpersonal and professional needs in oral language.

Credit: 3 units

ENGL 223 This course is a study of various literary genre-essay, short story, novel, drama, and poetry. Selected readings are writings of English. American and Filipino authors and are geared toward technology. The different literary types are read for appreciation. Extensive independent readings is encouraged.

Credit: 3 units

SOCIAL SCIENCES

PSYCHO 213 INDUSTRIAL PSYCHOLOGY

It is a course that deals with the application of Psychological methods and techniques to the solution of many human problems in industry and business or problems involving people in work situation. It also put emphasis on the importance of a systematic, quantitative approach to such problems, directed towards providing organized factual information that can be used in working out solutions to problems... thus leading to an integrated, meaningful relationship between an employer and the employees.

The application of Industrial Psychology deals with the personnel function, including such things as the selection

and placement of employees, employee training, merit rating, job evaluation and motivation, adaptation of work to the capacities and limitations of human beings.

Credit: 3 units

Prerequisite: Psychology 113

CONST 223 PHILIPPINE CONSTITUTION

The essence of the subject is the reaf-firmation of the valued concepts of liberty and Constitutional rule. It puts emphasis on the innovations and obligations so as to make them participate more actively in the task of nation building in the government so as to make it operate efficiency for the welfare of the citizen.

Credit: 3 units

For students in all courses.

TAX 223 LAND REFORM AND TAXATION

Part I, Taxation deals with the definition and nature of, as well as principles and concepts pertaining to taxation and states the underlying reasons why taxation is a vital function of any government.

Part II, Land Reform, present a historical background as a basis for the inevitable implementation of an agrarian reform program for our country. It states the definition of Land Reform Code. It reveals how an ultimate socio-economic progress can emanate from agrarian development. The bulk of this study is based on the modules jointly prepared by the MAR, MEC, UPS, and UP Los Baños.

Credit: 3 units

SS 313 INTRODUCTION TO INDUSTRIAL MANAGEMENT

As an introductory course in industrial management, Social Science 113, attempts to present management by utilizing the analysis of the basic managerial functions as a framework for organizing knowledge and techniques in the field.

Each of the units is organized around the management functions of planning, organizing, actuating and controlling to allow the student to grasp relationships between the principles underlying them, and be given the means of organizing existing knowledges in the field.

Credit: 3 units

SS 323 INDUSTRIAL RELATIONS

This course in Industrial Relations aims to prepare students for a better and more meaningful participation in industry as a formal organization and the informal relationships obtaining between management and labor; employee- employer relationships that eventually relate industry to community.

Credit: 3 units

ENGINEERING DRAWINGS

DRAW 111 D The course covers lettering descriptive geometry, orthographic projection and pictorial drawing and dimensioning.

Prerequisite: None

Credit: 1 unit

DRAW 121 D The course covers topics on tolerances, scaling blueprint reading, auxiliary projection and interpretation of surface finish and symbols.

Prerequisite: Draw 111 D

Credit: 1 unit

DRAW 211 D Topics covered are surface development, sectional views, threads, screws, fasteners, spring and welding symbols.

Prerequisite: Draw 121 D

DRAW 211 D Course consists primarily of problem bases, on the principles learned in previous drawing courses, includes product design review, protype making and information on patent and trade marks.

Prerequisite: Draw 211 D

Credit: 1 unit

ENGINEERING SCIENCES

ES 313 ENGINEERING MATERIALS AND GEOLOGY

The course includes Geology applied to Mining, a study of the Mineral resources of the Philippines funcamental nature of materials, properties of engineering materials, chemical metallurgy, physical metallurgy and mechanical metallurgy of ferrous metals and alloys. This also includes the study

of processes such as casting, hot working, cold working, and joining metals.

Credit: 3 units

Prerequisite: Chemistry,Physics 123 & 213 (BSME & BSEE)

ES 305/ES 315 ENGINEERING MECHANICS

A study of the fundamentals of mechanics, both statics and dynamics with applications in the field of Engineering.

Credit: 5 units

Prerequisite: Physics 123 Integral Calculus ES 305 (BSCE), BS 315 (BSME, BSEE)

ES 312/ES 322 KINEMATICS AND MACHINE ELEMENTS

A graphical and analytic study of displacement, velocity, and acceleration of common mechanisms. It also deals with the study of the elements of mechanisms which requires applications of the fundamental principles of physics and mathematics in the field of mechanical movement.

Credit: 2 units

Prerequisite: Engineering Drawing Physics 123, ES 322 (BSME), ES 312 (BSEE)

ES 311 D/ES 321 D KINEMATICS AND MACHINE ELEMENTS (DRAFTING)

A drafting course which includes all exercises related to the lecture phase.

Credit: 1 unit

Prerequisite: Taken with ES 322, ES 321 D (BSME) ES 311 D (BSEE)

ES 324 THERMODYNAMICS I

A study of the laws of thermodynamics, properties of gases, and power cycles of gases.

Credit: 4 units

Prerequisite: Physics 213

ES 315/ES 325 STRENGTH OF MATERIALS

A study which deals with the analysis and design of structural and machine elements based on the tensile, compressive, thermal, flexural, and sheering properties of the materials of construction; topics on beams and shaft columns, riveted and welded joints, shrink fits, and pressure vessels. This also includes theories on failure

of materials.

Credit: 5 units

Prerequisite: Integra Calculus Engineering Mechanics, ES 325 (BSME, BSEE) ES 315 (BSCE)

ES 344/ES 323/ES 343 FLUID MECHANICS

The course is vivided into two main parts, Hydrostatics and Hydrodynamics. Hydrostatics includes forces exerted by or upon bodies of fluid at test, while Hydrodynamics includes flow through orifices, nozzles, pipes, and weirs.

Credit: 3 units

Prerequisite: ES 343 (BME), ES 323 (BSEE) ES 344 (BSCE-4 units)

PRACTICUM SUBJECTS

CIVIL TECHNOLOGY

CT 114 P - Eals with basic bench processes, wood machining, sheet metal work, welding, etc.

CT 124 P - Deals with wood frames construction, houseframing, stair building, finishing carpentry, etc.

CT 214 P - Deals with foundation and layout excavation, concrete construction, amsonry work, etc.

CT 224 P - Deals with materials testing soil mechanics, etc..

CT 314 P - Deals with house planning and design, Architectural working, Drawing, Structural Plans, and Details, Blue Print Reading, etc.

CT 324 P - Deals with reinforced concrete construction, prestresses concrete, steel construction, etc.

MECHANICAL TECHNOLOGY

MT 114 P - Skill development and shopwork experiences in the use and care of common metal working hand tools, etc.

MT 124 P - Skill development and shopwork experiences in related fields like welding forging, foundry and sheet metal.

MT 214 P - Use of shaper and plane machines laying-out and setting-up work, etc.

MT 314 P - Processes involving rolling, forming, blanking and fastening of metal parts, design, advanced manufacturing techniques, etc.

MT 324 P - Procedures of Engineering Design from concepts to specifications, etc. and the use of modern machine tools.

REFRIGERATION AND AIRCONDITIONING

RAC 114 P - A practicum course including jobs on sheet metal, bench metal, welding (Elec. arc. and oxy-acetylene)

RAC 124 P - BASIC REPAIR (Domestic Ref.)
The course includes all practical work on compressor and refrigerant lines as well as service jobs such as dehydration and changing freon and refrigerant oil.

RAC 214 P - BASIC REPAIR (Commercial Ref.)
A practical course on electric motor, relays and controls. This also includes all service jobs for commercial refrigeration.

RAC 224 P - BASIC REPAIR (Industrial Ref.)
A practicum course on accessories, temperature controls, pressure controls in multitemperature systems. This also includes service jobs on all industrial refrigeration units.

RAC 314 P - Basic operation with ice-making refrigeration system and cold storage.

RAC 324 P - Basic operation with airconditioning system involving humidity control.

ELECTRICAL TECHNOLOGY

ET 114 P - ELECTRICAL COMPONENTS AND CIRCUITS
It includes basic tools and test instruments, electrical and electronics signs and symbols, house wiring methods/ materials. N.E.C. and P.E.C. requirements.

ET 124 P - ALTERNATING AND DIRECT CURRENT CIRCUITS
It covers A.C. and D.C. circuits, electromagnetism and transformer operation, industrial wiring/materials, electrical planning, estimates and designs and protection.

ET 214 P - INDUSTRIAL WIRING/MACHINERY
It covers installation of service entrance, ac/dc motor and generators, ac/dc motor control, industrial equipments for general use.

ET 224 P - ELECTRONICS COMPONENTS AND CIRCUITS
It covers the principles and operation of vaccum tubes/semiconductors, ac/dc circuit principles, advance ac/dc circuits and measuring tools and equipments.

ET 314 P - ADVANCE ELECTRIC CIRCUIT which covers a study of telephone and intercom system, electrical illumination, power wiring design and electrical wiring system and code.

ET 324 P - Power generation, transmission and distribution. It covers electrical equipments, electrical power plant, electric power transmission and distribution and servo-mechanism.

CIVIL ENGINEERING

CE 312 - ELEMENTARY SURVEYING

Theory and use of surveying instruments including tape, traverses, and transit level stadia and plane table; running of traverses and levelling; preparation of plans of surveys; computation of traverses, areas and location.

Credit: 2 units

Prerequisite: Math 113

Accompanied by CE 312 F

CE 312 F - ELEMENTARY SURVEYING (FIELD)

Field exercises and practical application of the principles taken in elementary survying including adjustments of instruments.

Credit: 2 units

Prerequisite: Math 113

Accompanied by CE 312

CE 313 - COST AND ESTIMATES

A study in project cost estimates. Efficient and economical use of materials, equipment, manpower and financial resources.

Credit: 3 units

Prerequisite: Third year standing

CE 332 - SOIL MECHANICS

A study of proerties, identification and classification of soils, determination of soil constant permeability, comprehensibility shearing strength of soils; consolidation and settlements analysis; stability of slopes and walls and lateral pressure.

Credit: 2 units

Prerequisite: ES 305

2 Hour a Week (Class)

CE 323 PRINCIPLES OF REINFORCED CONCRETE

Theory and design of beams; one-way; two-way; flat of ribbed slabs, girders and columns as related to building frames reataining walls and bridges.

Credit: 3 units

Prerequisite: ES 315

CE 352 MATERIALS TESTING

A study of the properties and use of materials of construction such as timber, cast and wrought iron, steel, copper, tin, zinc, and their useful alloys, cement; sand, gravel, and concrete misctures; plastics and laminates.

Credit: 2 units

Prerequisite: Third Year Standing

CE 433 HYDRAULICS ENGINEERING

Descriptive and qualitative hydrology ground water hydraulics and flood hydraulics projects such as reservoirs and channels. Hydraulic machinery, hydroelectric, drainage and multiple purpose projects.

Credit: 3 units

Prerequisite: ES 344

CE 413 ENGINEERING ECONOMICS AND ACCOUNTING

Application of the principles of engineering in the solution of business problems; study of the engineering processes, such as research, valuation, financial, planning, organization, promotion, design, construction, supervision, production, operation sales, and distribution; making and keeping records of cost and supply data necessary to enable the young engineer to discuss with client and/or adviser the project problems in the preliminary stage of professional service.

Credit: 3 units

Prerequisite: Fourth Year Standing

CE 412 HIGHER SURVEYING (LECTURE)

Topographic surveying methods, triangulation; solar and stellar observations for latitude, time and azimuth, differential trigonometric, barometric and precise levelling; locating shorelines and soundings; gauging and measuring velocity and discharge of streams; the use of sextants; elements of serial surveying.

Credit: 2 units

Prerequisite: CE 312 Taken with CE 412 F

CE 412 F HIGHER SURVEYING (FIELD)

Field exercises and practical application of the principles taken in CE 412 (Lecture).

Credit: 2 units

Prerequisite: CE 312 F Accompanied CE 412

CE 442 FOUNDATIONS

Piles and pile driving including timber concrete, metal and sheet piles, subsurface exploration; coffer, dams, and bulk heads; box and open caissons; pneumatic caissons for bridges and building; ordinary bridge piers; bridge abutments; spread footing for building foundations.

Credit: 2 units

Prerquisite: CE 332, CE 323

CE 423 ENGINEERING MATERIALS AND GEOLOGY

A study of the properties, composition, methods of manufacture and uses of iron and its alloys, present day alloy steels; non-ferrous metals encountered in mechanical equipment, including a study of synthetic materials for practical application and also a course which involves the study of earth materials, surface and underground waters, rivers, coastal and harbor works, control of landslides, and foundation problems involving structure built on natural materials.

Credit: 3 units

Prerequisite: Chem 213

CE 422 HIGHWAY AND RAILWAY CURVES

The course includes the theory and laying out of railway and highway curves; horizontal curves including simple curves, compound curves, reversed curves, parabolic curves, turnout, spiral curves and vertical curves.

Credit: 2 units

Prerequisite: CE 412, CE 412 F

Accompanied by CE 422 F

CE 422 F HIGHWAY AND RAILWAY CURVES (FIELD)

Field exercises and practical application of the principles taken up in CE 422 (Lecture).

Credit: 2 units

Prerequisite: CE 412, CE 412 F

Accompanied by CE 422

CE 424 THEORY OF STRUCTURES

Theory of stress analysis as applied to determine structure due to statics and moving loads; graphic statics, approximate nanalysis of continuous beams and simple rigid frames by the moment distribution methods, analysis of trusses, portals and building frams due to lateral loads.

Credit: 4 units

Prerequisite: ES 315, Must be taken with CE 421D

CE 421 D THEORY OF STRUCTURES (DESIGN)

Computation and exercises in the solution of problems on theory of structures.

Credit: 1 unit

Prerequisite: Must be taken with CE 424

CE 512 EARTHWORK ENGINEERING

Theory of practice of reconnaissance, preliminary and locations surveys of railroads and highways, the setting of stakes for earthwork, the study of special problems on side hill work, transition from cut to fill, and mass diagram.

Credit: 2 units

Prerequisite: CE 422, Must be taken with CE 512 F

CE 512 F EARTHWORK ENGINEERING (FIELD)

Field exercises, demonstration and problems related to Earthwork.

Credit: 2 units

Prerequisite: CE 422 F, Must be taken with CE 512

CE 513 HIGHWAY AND TRAFFIC ENGINEERING

A study of the modern highway location practices; elements and geometric and structural design of highways; construction of procedures of embankment, subgrades, subbases and bases; construction of bituminous surfacings and pavements highway equipment utilization; highway traffic survey and control.

Credit: 3 units

Prerequsite: CE 332, CE 512, CE 512 F

CE 512 TIMBER DESIGN

Design of timber structures with careful attention to details of joints and splices, roof and bridge trusses; from work and soaffolding.

Credit: 2 units

Prerequisite: CE 424, CE 421 D

Must be taken with CE 511 D

CE 511 D TIMBER DESIGN (DESIGN)

Practical problems and applications related to the study of timber design and construction.

Credit: 1 unit

Prerequisite: CE 424, CE 421 D

Must be taken with CE 512

CE 514 STEEL DESIGN

Design of structural elements in steel including details of the joints and splices, design of riveted and welded trusses and plate girders, as applied to buildings, bridges and other engineering structures.

Credit: 4 units

Prerequisite: CE 424, CE 421 D

Must be taken with CE 531 D

CE 531 D STEEL DESIGN (DESIGN)

Practical problems and applications, computation, and detailing works related to steel design and construction.

Credit: 1 unit

Prerequisite: CE 424, CE 421 D

Must be taken with CE 514

CE 532 WATER SUPPLY ENGINEERING

Determination of the course, quality and quantity of water supply. Plumbing principles and the hydraulics, design and construction of water works systems. Collection of ground water, rain water, and surface waters, objects and methods of water purification. Operation and maintenance of water works system. Protection of water supply systems from environmental pollution.

Credit: 2 units

Prerequisite: ES 344, Must be taken with CE 433

CE 552 SEWERAGE AND SEWAGE DISPOSAL

Quantity and character of sewage, industrial waste and storm water, Plumbing principles and the design, construction.

Credit: 2 units

Prerequisite: ES 344

CE 521 SAFETY ENGINEERING AND MAINTENANCE

A study of the civil engineering code and the latest methods of preventive maintenance of all kinds of construction tools and equipment.

Credit: 1 unit

Prerequisite: Fifth Year Status

CE 523 CONTRACTS, SPECIFICATIONS AND PROFESSIONAL ETHICS

CONTRACTS-The laws of contracts, quasi-contracts, government contracts, preparation of contracts, judicial decisions, principles of the law of obligation and those of the law of torts and damages.

SPECIFICATIONS-A study of the procedure of private professional practice of civil engineering and the correlation, integration and construction of the specification for materials, labor and workmanship as learned from the different subjects of engineering into documents necessary in the "contract document stage" of the civil engineers professional service.

PROFESSIONAL ETHICS-A study not only the laws, rules and regulations which govern the practice of civil engineering professions in the Philippines but also of the equipment of professional practice to enable the civil engineering practitioner to carry his practice according to the correct manner and right conduct of the practice.

Credit: 3 units

Prerequisite: Fifth Year Standing

CE 522 CONSTRUCTION METHODS AND EQUIPMENT

A detailed study of various methods of road, bridge and building construction which include soil investigation, material sources; operation and maintenance of equipment; preparation of progress reports; charts and cost of project.

Credit: 2 units

Prerequisite: Fifth Year Standing

CE 543 ELEMENTS OF ENVIRONMENTAL ENGINEERINC

A study of the principles of design of sanitary and storm water runoff, design and construction of sewerage system, industrial waste treatment, sludge and sewage disposal.

Credit: 3 units

Prerequisite: ES 344

CE 563 EARTHQUAKE ENGINEERING (ADVANCE DESIGN)

Analysis of seismic forces on structures; principles on earthquake resistant design; application of the principles of plastic design; ultimate strength design and prestressed concrete design on steel frames, buildings, bridges and other structures.

Credit: 3 units

Prerequisite: CE 514, CE 531 D, CE 323

CE 542 IRRIGATION

This course covers the study of water requirement to plant life, water distribution and design of canal network, structures, and drainage facilities. Hydraulic analysis and design of canals, canal structures, spill ways, stilling basins and energy dissipators. Study of the forces acting on low and high dams in relation to the stability analysis. The course also requires a complete design and development of the gravity irrigation project with sketches and computation.

Credit: 2 units

Prerequisite: CE 433

CE 524 REINFORCED CONCRETE DESIGN (LECTURE)

Application of the principles of reinforced concrete in the design of typical structures as multi-story buildings; covering one-way, two-way, and flat slabs, footings, beam bridge, retaining walls, box culverts.

Credit: 4 units

Prerquisite: CE 323

Must be taken with CE 521 D

CE 521 D REINFORCED CONCRETE DESIGN (DESIGN)

Computations and detailings related to the study of reinforced concrete design and construction.

Credit: 1 unit

Prerequisite: CE 323

Must be taken with CE 524

EE 412 ELECTRICAL CIRCUITS

A course devoted to the field of electrical engineering of importance to civil engineering students. Study of fundamental laws of DC-AC electric circuits, constructions and application of DC and AC instruments, and DC motors and generators.

Credit: 2 units

Prerequisite: Physics 223

Must be taken with EE 411 L

EE 411 L ELECTRICAL CIRCUITS LABORATORY

Measurements of current and voltages in different combination of resistances inductance and capacitance. Power measurements in single phase and polyphase systems. Power factor corrections in AC circuits.

Credit: 1 unit

Prerequisite: Physics 221 L

Must be taken with EE 412

EE 422 ELECTRICAL MACHINE AND CONTROL

A continuation of EE 412 covering study of AC circuits and the basic principles under laying the operation, construction and application of AC generators, motors, transformers and industrial wiring systems.

Credit: 2 units

Prerequisite: EE 412

Must be taken with EE 421 L

EE 421 L ELECTRICAL MACHINE AND CONTROL LAB.

Measurements of current and voltages in different combination of resistances inductance and capacitance. Power measurements in single phase and polyphase systems. Power factor corrections in AC circuits.

Credit: 1 unit

Prerequisite: EE 411 L

Must be taken with EE 422

ME 413 MECHANICAL ENGINEERING I

A study of the principles of thermodynamics and its application to internal combustion engines, steam engines and steam turbines.

Credit: 3 units

Prerequisite: Math 225, Phys 223

ME 423 MECHANICAL ENGINEERING II

A study of the principles and operation of mechanical equipments used in construction projects like pumps, compressors, concrete mixers, grading equipment, etc.

Credit: 3 units

Prerequisite: ME 413

ELECTRICAL ENGINEERING

EE 322 NUCLEAR PHYSICS

A course covers the study of the nuclear atom and the nuclear processes with emphasis on atomic fission and fusion. This also includes a study of reactor design in relation with the different reactor processes.

Credit: 2 units

Prerequisite: Physics 213, Chem 213

EE 434 THERMODYNAMICS I

A study of the laws of Thermodynamics, properties of gases, and power cycles of gases.

Credit: 4 units

Prerequisite: Physics 213

EE 413 ENGINEERING ECONOMICS AND ACCOUNTING

A course which includes basic accounting, economic studies and financial analysis.

Credit: 3 units

Prerequisite: Fourth Year Status

EE 414 ELECTRIC MACHINERY I

A study of the characteristics of DC machines and their industrial applications.

Credit: 4 units

Prerequisite: Practicum ET 324 P

EE 444 THERMODYNAMICS II

This course includes properties of liquids and vapors, generation of power, modern steam vapor cycles and flow of steam and nozzles and turbines.

Credit: 4 units

Prerequisite: Thermo I

EE 424 ELECTRIC MACHINERY II

A continuation of Electric Machinery I which includes alternator, regulation and operation, transformers, induction motors and synchronous motors.

Credit: 4 units

Prerequisite: EE 414

EE 443 COMPUTER PROGRAMMING

A comprehensive study of the computer, its parts and their functions, the number systems used, and the basic computer languages.

Credit: 3 units

Prerequisite: Basic Electronics II ECE 413

EE 423 ELECTRICAL TRANSIENTS

A study of the transient and steady state solutions to linear systems with emphasis on the use of differential equations and lallace Transform.

Credit: 3 units

Prerequisite: Advanced Engineering Mathematics

EE 421 MACHINE FOUNDATION

A study of the principles and appreciations of foundation and the design of the machine foundation.

Credit: 1 unit

Prerequisite: Strength of Materials

EE 533 CONTRACTS, SPECIFICATIONS, ENGINEERING LAWS AND ETHICS

The subject includes the profile of an engineer, his personal and ethical relations; the legal obligations, right and responsibilities of technical men, and the elements of contracts. It also includes bidding, advertising specifications and the electrical and mechanical engineering laws of the Philippines.

Credit: 3 units

EE 513 ELECTRICAL EQUIPMENT

A course which includes the applications of the available specification and principles laid down in books to the equipping shops, factories, and industrial plants.

Credit: 3 units

Prerequisite: EE 424

EE 511 ELECTRICAL EQUIPMENTS AND MACHINE DESIGN

A course which includes the design of all types of Electrical machines and quipments.

Credit: 1 unit

Prerequisite: Taken with EE 511

EE 511 D ELECTRICAL EQUIPMENTS AND MACHINE DESIGN (DESIGN)

A drafting course which includes all exercises related to the lecture phase of the subject.

Credit: 1 unit

Prerequisite: Taken with EE 511

EE 531 F SEMINAR AND FIELD TRIPS

A course which will expose the students to different industrial plants, power plants of topics of special interests.

Credit: 1 unit

Prerequisite: EE 424

EE 523 ELECTRIC POWER PLANT ENGINEERING

A course including design and installation of electric generating station.

Credit: 3 units

Prerequisite: Electrical Equipments

EE 521 L ELECTRIC POWER PLANT ENGINEERING LAB.

A laboratory course which includes all activities required by the lecture phase

Credit: 1 unit

Prerequisite: EE 523

EE 543 ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

The course includes the fundamental principles in power transmission and they are made applicable to practical engineering problems. This also includes practical information concerning present-day practice in electric power transmission in the Philippines.

Credit: 3 units

Prerequisite: EE 423, Math 323

EE 541 ELECTRIC POWER TRANSMISSION AND DISTRIBUTION (LAB.)

The course includes all exercises and activities which will strengthen the lecture phase of the subject.

Credit: 1 unit

Prerequisite: EE 543

EE 522 INDUSTRIAL ELECTRONICS

A course which includes the operation of electronic components and their application to industry.

Credit: 2 units

Prerequisite: EE 514

EE 561 L INDUSTRIAL ELECTRONICS (LAB.)

A laboratory course which includes all exercises and experiments related to the lecture topics in electrical Machinery.

Credit: 2 units

Prerequisite: EE 424, EE 521

EE 521 ILLUMINATION AND WIRING DESIGN

The course includes a comprehensive study of the design and installation of electrical equipment gadgets, and accessories for power requirements in industry, commercial centers, and residences.

Credit: 1 unit

Prerequisite: Fifth Year Status

EE 581 L ILLUMINATION AND WIRING DESIGN (LAB.)

This is a laboratory course which includes all activities required by the lecture phase.

Credit: 1 unit

Prerequisite: EE 521

ECE 323 ELECTRONICS I

A course which includes the theory of operation of semiconductor diodes and transistors. This also includes the application of diodes as rectifiers and fundamentals of amplifiers.

Credit: 3 units

Prerequisite: Practicum EE 314 P

ECE 413 ELECTRONICS II

A course which includes the analysis and design of single state and cascaded amplifiers to include feedback theory and its application.

Credit: 3 units

Prerequisite: ECE 323

ECE 514 ELECTRONICS AND ELECTRICAL COMMUNICATION

A course on the theory and practice involved in a wire and wireless communication system.

Credit: 4 units

Prerequisite: EE 423

ECE 511 L A laboratory course including all exercises and activities supportive to the lecture phase.

Credit: 1 unit

Prerequisite: Taken with ECE 514

ME 412 L MECHANICAL ENGINEERING LAB. I

A laboratory course which includes all exercises and experiments on the use and maintenance of all measuring devices, meters, and gauges used in industrial and power plants.

Credit: 2 units

Prerequisite: Taken with Thermo I

ME 422 L MECHANICAL ENGINEERING LAB. II

A laboratory course which familiarizes students with the essential elements of mechanical machines and the determination of machine ratings through actual measurements of parts.

Credit: 2 units

Prerequisite: ME Lab. I

ME 413 HYDRAULICS MACHINERY

A study of the operating principles of all classes of pumps, their selection and application to Industry and Power Plants.

Credit: 3 units

Prerequisite: ES 323

MECHANICAL ENGINEERING

ME 414 THERMODYNAMICS II

The course includes properties of liquids and vapors, processes of vapors, generation of power, modern steam vapor cycles, and flow of steam in nozzles and turbines.

Credit: 4 units

Prerequisite: Thermo I

ME 412 L — MECHANICAL ENGINEERING LAB. I

A laboratory course which includes all exercises and experiments on the use and maintenance of all measuring devices, meters, and gauges used in industrial and power plants.

Credit: 2 units

Prerequisite: Taken with Thermo II

ME 422 — MECHANICAL ENGINEERING LAB. II

A laboratory course which familiarizes students with the essential elements of mechanical machines and the determination of machine ratings through actual measurement of parts.

Credit: 2 units

Prerequisite: ME Lab. I

ME 423 — REFRIGERATION AND AIRCONDITIONING SYSTEM

A course which includes the study of the methods of refrigeration and the different cycles included therewith. This also includes the study of the different air conditioning and refrigeration equipment.

Credit: 3 units

Prerequisite: Thermo II

ME 432 — NUCLEAR PHYSICS

A course which covers the study of the nuclear atom and the nuclear processes with emphasis on atomic fission and fusion. This also includes a study of reactor design in relation with the different reactor processes.

Credit: 2 units

Prerequisite: Physics 213

ME 433 — HYDRAULICS/PNEUMATICS

A study of the frictional flow of both compressible and incompressible fluids using Reynold's criterion and metering of fluids, with emphasis on the computations involved in the proper use of pipes, fittings and flow meters. This also includes a detail study of turbines, pumps, compressors, blowers, and fans.

Credit: 3 units

Prerequisite: ES 343

ME 431 L — HYDRAULICS/PNEUMATICS LAB.

All exercises and experiments supportive to the lecture

part of the subject.

Credit: 1 unit

Prerequisite: Taken with ME 433

ME 442 NUCLEAR POWER ENGINEERING

A study of the principles of power generation using a nuclear reactor. The subject also includes an extensive study of the plant layout and the equipment used in nuclear power plants.

Credit: 2 units

Prerequisite: MR 432

ME 463 INTERNAL COMBUSTION ENGINE

A comprehensive study of internal combustion engines including gasoline, kerosene and diesel engines. It also includes a study of the coordinating accessories in internal combustion engine plants as well as a study of gas turbines.

Credit: 3 units

Prerequisite: Thermo I

ME 462 MACHINE DESIGN I

A course which includes a short review of engineering and their properties, stress analysis, and theories of failure. This is followed by a detailed study of the design of screw, springs, keys and couplings, bearings, belts and pulleys, gears, brakes and clutches and welded sections.

Credit: 2 units

Prerequisite: ES 325, Strength of Materials

ME 461 L MACHINE DESIGN LAB. I

A laboratory course which includes all exercises and experiments related to the lecture phase of the subject.

Credit: 1 unit

Prerequisite: Taken with, ME 462

ME 482 SAFETY AND MAINTENANCE ENGINEERING

A course which includes the study of mechanical engineering code and latest methods of preventive maintenance of all kinds of power, tools, and electrical equipment.

Credit: 2 units

Prerequisite: Fourth Year Status

ME 511 L REFRIGERATION AND AIRCONDITIONING DESIGN

A laboratory course including all exercises and activities related to the lecture phase.

Credit: 1 unit

Prerequisite: ME 532, Taken with the lecture

ME 512 MACHINE DESIGN II

A lecture course which includes the study of the design of a universal joint, bearing and journal, leaf springs for cars, elevator wire rope drive, clutch, multiple-V-velt drive, hollow column, and hydraulic press.

Credit: 2 units

Prerequisite: ME 462

ME 512 L MACHINE DESIGN LAB. II

A laboratory course which includes all drafting work required by the lecture phase

Credit: 2 units

Prerequisite: Taken with, ME 512

ME 514 STEAM POWER ENGINEERING

A course which includes the study of steam prime movers, steam engines, steam turbines, heat transfer equipment, and other necessary apparatus, machines, and equipment in a steam power station. This also includes a study of the possible fuels and the process of combustion; the most ideal plant layout, and the duct work and piping system.

Credit: 4 units

Prerequisite: Thermo II

ME 513 ENGINEERING ECONOMICS AND ACCOUNTING

A course which includes the basic accounting, economic studies and financial analysis.

Credit: 3 units

Prerequisite: Fifth Year Status

ME 523 POWER PLANT DESIGN

A course which includes all topics necessary to complete a design of a power plant. Emphasis is given on specifications of all equipment, plant layout, and working drawings.

Credit: 3 units

Prerequisite: ME 463, ME 512, ME 423, ME 482

ME 522 POWER PLANT DESIGN LAB.

This laboratory course includes all activities required by the lecture phase

Credit: 2 units

Prerequisite: Taken with ME 523

ME 532 L — MECHANICAL ENGINEERING LAB. III

A laboratory course which includes all activities geared towards the realization of the basic theories and principles governing the complete test and operation of a mechanical plant.

Credit: 2 units

Prerequisite: ME 422 L

ME 532 — REFRIGERATION AND AIRCONDITIONING

A course which includes basic principles of refrigeration and the industrial applications of refrigeration and airconditoning with emphasis on the design of centralized airconditioning system, as well as the design erection, operation and testing of refrigerated structure.

Credit: 3 units

Prerequisite: Thermo I

ME 542 — INDUSTRIAL PLANT DESIGN

A course which includes the lements of general planning, surveys, functional product-design, determination of plant location. This also includes process engineering and project-design, pre-construction cost estimate, estimate of equipment cost, and economic evaluation of the project.

Credit: 2 units

Prerequisite: Fifth Year Status

ME 541 L — INDUSTRIAL PLANT DESIGN LAB.

A laboratory course which includes all drafting work and other activities required by the course.

Credit: 1 unit

Prerequisite: Taken with ME 542

ME 522 — ENVIRONMENTAL ENGINEERING

A course which includes ecological balances, sources of pollution, effects of pollution, governmental policies on pollution, general methods of control, and recycling.

Credit: 2 units

Prerequisite: Fifth Year Status

ME 543 — CONTRACTS, SPECIFICATIONS, LAWS AND ETHICS

The subject includes the profile of an engineer, his personal and ethical relations; the legal obligations, right contracts. This also includes topics of bidding, advertising, specifications, and the electrical and

mechanical engineering laws of the Philippines.

Credit: 3 units

Prerequisite: Fifth Year Status

ME 552 INDUSTRIAL PROCESSES

A study of industrial processes, manufacturing procedures and corresponding flowsheets, industrial controls with emphasis on the processes and controls of the plants which employ mechanical engineers.

Credit: 2 units

Prerequisite: Fifth Year Status

ME 562 PROJECT STUDY

A course including market, technical, financial, legal and corporate, and general aspects of project feasibility studies.

Credit: 2 units

Prerequisite: Fifth Year Status

COMP 522 COMPUTER LABORATORY

A comprehensive study of the computer, its parts and their functions, the number systems used, and the basic computer languages.

Credit: 2 units

Prerequisite: ECE 422

EE 313 ELECTRICAL CIRCUITS

A comprehensive study of the principles of magnetism, d-c circuits, and a-c circuits with emphasis on circuit analysis.

Credit: 3 units

Prerequisite: Physics 223, Integral Calculus

EE 311 L ELECTRICAL CIRCUITS (LAB.)

A laboratory course which includes all exercises and experiments related to the lecture phase of the course.

Credit: 1 unit

Prerequisite: EE 313, Taken with the lecture

EE 413 ELECTRICAL MACHINERY AND CONTROL

A study of the characteristics of d-c machines and their industrial applications. This includes a comprehensive study of generator, motor, alternator, transformer, and converters.

Credit: 3 units

Prerequisite: EE 313

EE 411 L — ELECTRICAL MACHINERY AND CONTROL (LAB.)

A laboratory course which includes all exercises and exercises and experiments which could strengthen the lecture phase of the course.

Credit: 1 unit

Prerequisite: EE 413

ECE 422 — BASIC ELECTRONICS

A course which includes the study of semi-conductor diodes and transistors, integrated circuits, and applications in the mechanical engineering field.

Credit: 2 units

Prerequisite: EE 413

ECE 421 L — BASIC ELECTRONICS (LAB.)

A laboratory course including all exercises and experiments related to the lecture phase.

Credit: 1 unit

Prerequisite: ECE 422, Taken with the lecture

CE 411 — ELEMENTARY SURVEYING

Theory and use of surveying instruments including tape, compass, transit, level and plane table; running of traverse and levelling; preparation of plans and surveys as applied to building fields.

Credit: 1 unit

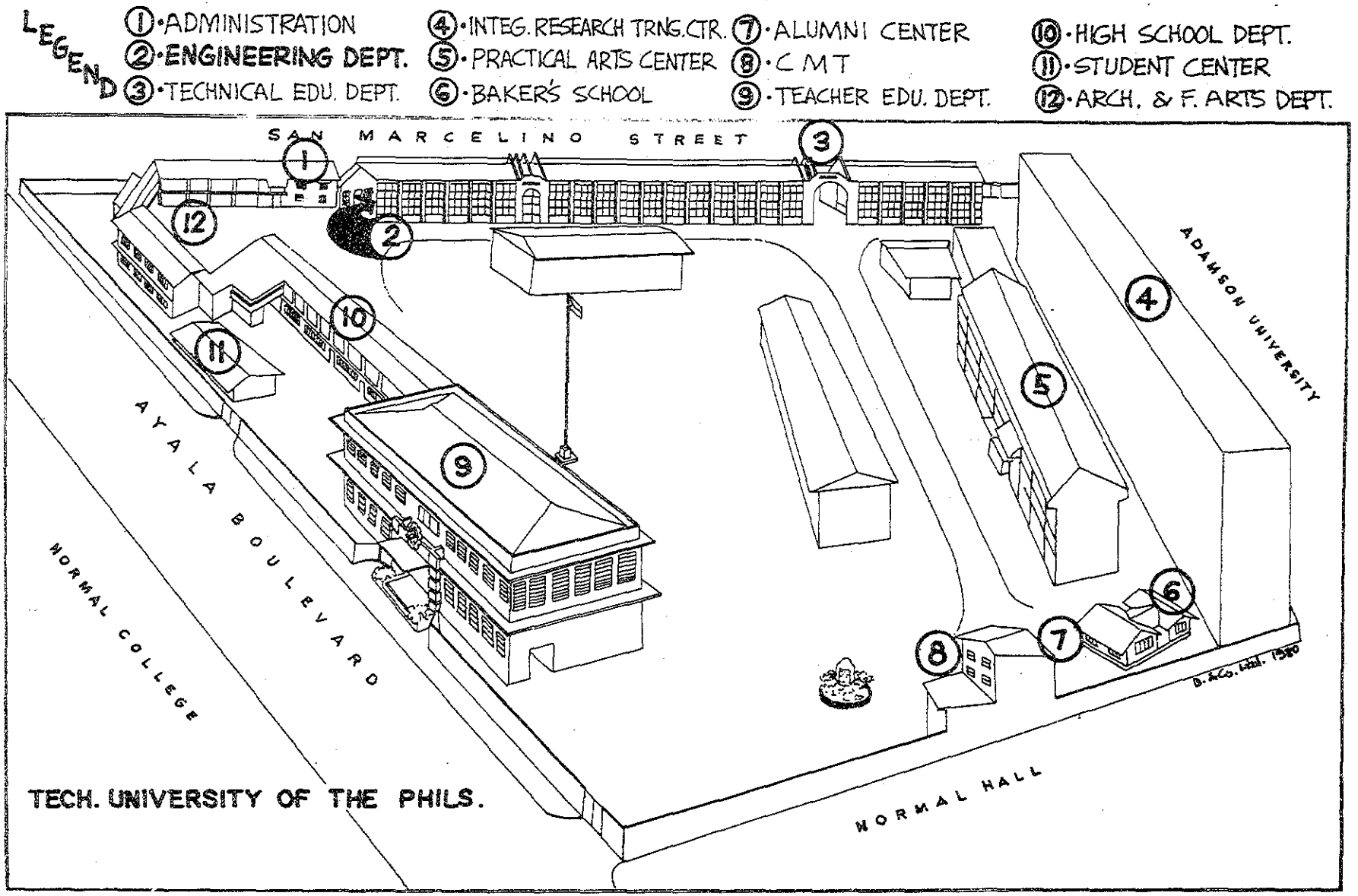
Prerequisite: Math 113, Taken with CE 411 E

CE 411 F — ELEMENTARY SURVEYING (FIELD)

Field exercises and practical application of principles taken in CE 411.

Credit: 1 unit

Prerequisite: Math 113, Taken with CE 411


LEGEND
①·ADMINISTRATION
②·ENGINEERING DEPT.
③·TECHNICAL EDU. DEPT.
④·INTEG. RESEARCH TRNG. CTR.
⑤·PRACTICAL ARTS CENTER
⑥·BAKER'S SCHOOL
⑦·ALUMNI CENTER
⑧·C M T
⑨·TEACHER EDU. DEPT.
⑩·HIGH SCHOOL DEPT.
⑪·STUDENT CENTER
⑫·ARCH. & F. ARTS DEPT.
SAN MARCELINO STREET
ADAMSON UNIVERSITY
AYALA BOULEVARD
NORMAL COLLEGE
NORMAL HALL
TECH. UNIVERSITY OF THE PHILS.

7. PCAT－TUPの全入校生実績

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES
MANILA

PROGRAM/CURRICULUM	1974－1975						1975－1976						1976－1977						1977－1978						1978－1979					
	ENRLMENT			GRADUATES			ENRLMENT			GRADUATES			ENRLMENT			GRADUATES			ENRLMENT			GRADUATES			ENRLMENT			GRADUATES		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Undergraduate																														
2-yr. Technical Courses																														
1. *Automotive Technology*	361	1	362	81	–	81	344	–	344	58	0	58	342	0	342	58	0	58	355	0	355	47	0	47	366	0	366	13	0	13
2. Ceramics	16	20	36	0	6	6	17	20	37	5	2	7	16	16	32	1	6	7	7	18	25	2	6	8	9	2	11	1	1	2
3. Cosmetology	0	14	14	–	–	–	0	5	5	–	–	–	0	4	4	0	1	1	1	10	11	0	1	1	–	–	–	–	–	–
4. Drafting Tech.	291	32	323	40	6	46	318	40	358	42	8	50	356	34	390	42	12	54	400	47	447	41	5	46	405	57	462	5	2	7
5. Electrical Tech.	362	0	362	95	0	95	492	1	493	77	0	77	495	0	495	94	0	94	511	2	513	102	0	102	552	1	553	27	0	27
6. Electronics Communications	201	11	212	33	0	33	180	12	192	41	4	45	187	20	207	35	1	36	194	25	219	36	4	40	109	21	130	8	0	8
7. Foods	1	65	66	0	4	4	2	92	94	0	18	18	1	74	75	0	13	13	4	106	110	0	26	26	3	108	111	0	1	1
8. Foundry	45	0	45	8	0	8	30	0	30	7	0	7	30	0	30	4	0	4	33	0	33	–	–	–	26	0	26	1	0	1
9. Furniture & Cabinet Making	7	0	7	–	–	–	3	0	3	1	0	1	5	0	5	–	–	–	3	0	3	–	–	–	1	0	1	–	–	–
10. Garments	6	59	65	0	2	2	1	55	56	0	7	7	0	48	48	0	5	5	1	65	66	0	20	20	1	40	41	–	–	–
11. Machine Shop (old Curriculum)	1	0	1	1	0	1	starting school year 1967-68, the 3-yr. Technician course in Mechanical Technology was offered.																							
12. Printing	32	7	39	1	1	2	32	6	38	4	1	5	33	4	37	7	0	7	27	7	34	2	3	5	19	6	25	0	1	1
13. Sheet Metal	5	2	7	–	–	–	9	0	9	1	0	1	8	0	8	2	0	2	8	0	8	2	0	2	8	0	8	–	–	–
14. Stationary Marine Engineering	501	0	501	115	0	115	602	0	602	178	0	178	685	0	685	173	0	173	795	0	795	174	0	174	831	0	831	43	0	43
15. Tool & Die Making	75	0	75	–	–	–	85	0	85	18	0	18	66	0	66	15	0	15	77	0	77	14	0	14	89	0	89	1	0	1
16. Welding	27	0	27	6	0	6	21	0	21	2	0	2	27	0	27	4	0	4	33	0	33	–	–	–	34	0	34	–	–	–
17. Wood Pattern Making	5	0	5	2	0	2	9	0	9	–	–	–	6	0	6	1	0	1	13	0	13	2	0	2	9	0	9	–	–	–
Total (A)	1936	211	2147	382	19	401	2145	231	2376	434	40	474	2257	200	2457	436	38	(437)	2462	280	2742	422	65	487	2462	235	2697	99	5	104
3-yr. Technicians' Courses																														
1. Civil Technology	61	0	61	5	0	5	68	0	68	8	0	8	51	0	51	11	0	11	74	0	74	9	0	9	87	0	87	2	0	2
2. Electronics Tech.	622	9	631	57	0	57	581	10	591	98	0	98	529	18	547	88	2	90	476	12	488	64	3	67	508	9	517	8	0	8
3. Mechanical Tech.	533	0	533	38	0	38	601	0	601	73	0	73	573	0	573	71	0	71	580	0	580	95	0	95	575	0	575	8	0	8
4. Refrigeration & Air Condition-ing Conditioning Tech.	271	1	272	18	0	18	299	0	299	14	0	14	284	1	285	32	0	32	265	0	265	27	0	27	254	0	254	4	0	4
Total (B)	1487	10	1497	118	0	118	1549	10	1559	193	0	193	1437	19	1456	202	2	204	1395	12	1407	195	3	198	1424	9	1433	22	0	22
4-yr. Teacher Education																														
1. BSIE-Ind. Arts major	215	202	417	40	43	83	166	185	351	40	37	77	147	179	326	39	44	83	127	127	256	25	36	61	165	127	292	6	9	15
2. BSIE-Chemistry major	0	4	4	–	–	–	0	4	4	0	3	3	0	1	1	0	1	1	–	–	–	–	–	–	–	–	–	–	–	–
3. BSIE-Math Major	1	13	14	1	5	6	1	6	7	0	4	4	0	1	1	0	1	1	1	0	1	1	0	1	–	–	–	–	–	–
4. BSIE-Physics major	1	0	1	–	–	–	1	0	1	1	0	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5. BSIE-Shop Major																														
a. Automotive Tech.	49	0	49	17	0	17	36	0	36	20	0	20	43	0	43	10	0	10	33	0	33	13	0	13	21	0	21	1	0	1
b. Building Construction	4	0	4	2	0	2	8	0	8	1	0	1	8	0	8	2	0	2	5	0	5	3	0	3	6	0	6	1	0	1
c. Ceramics	2	1	3	1	1	2	1	2	3	0	1	1	3	0	3	–	–	–	5	2	7	1	1	2	8	1	9	–	–	–
d. Cosmetology	0	3	3	–	–	–	0	3	3	0	1	1	0	1	1	0	1	1	0	1	1	–	–	–	–	–	–	–	–	–
e. Drafting	15	3	18	7	1	8	10	8	18	1	0	1	12	11	23	6	7	13	13	9	22	1	4	5	15	7	22	–	–	–
f. Electrical Tech.	20	0	20	6	0	6	22	0	22	8	0	8	24	2	26	10	0	10	24	2	26	5	2	7	37	0	37	–	–	–
g. Electronics Communications	1	0	1	–	–	–	2	0	2	1	0	1	5	0	5	2	0	2	6	1	7	–	–	–	4	0	4	–	–	–
h. Electronics Tech.	21	3	24	10	2	12	21	2	23	5	1	6	15	2	17	10	1	11	6	2	8	0	1	1	7	2	9	–	–	–
i. Foods	0	20	20	0	8	8	0	22	22	0	9	9	0	21	21	–	–	–	0	11	11	0	2	2	0	1	1	–	–	–
j. Foundry	6	0	6	1	0	1	7	0	7	3	0	3	4	0	4	1	0	1	3	0	3	–	–	–	4	0	4	–	–	–
k. Furniture & Cabinet Making	12	0	12	8	0	8	4	0	4	4	0	4	2	0	2	–	–	–	3	0	3	3	0	3	1	0	1	1	0	1
l. Garments	0	27	27	0	13	13	0	14	14	0	9	9	0	7	7	0	1	1	0	7	7	–	–	–	–	–	–	–	–	–
m. Mechanical Tech.	17	0	17	4	0	4	18	0	18	8	0	8	18	0	18	4	0	4	20	0	20	7	0	7	25	0	25	–	–	–
n. Printing	2	0	2	–	–	–	3	0	3	1	0	1	–	–	–	–	–	–	2	0	2	–	–	–	2	0	2	–	–	–
o. Refrigeration & Air Conditioning	7	0	7	1	0	1	6	0	6	4	0	4	5	0	5	1	0	1	4	0	4	1	0	1	6	0	6	–	–	–
p. Sheet Metal	1	0	1	–	–	–	1	0	1	–	–	–	–	–	–	–	–	–	1	0	1	–	–	–	1	0	1	–	–	–
q. Stationary Marine Eng'g	5	0	5	3	0	3	6	0	6	1	0	1	7	0	7	3	0	3	9	0	9	–	–	–	14	0	14	–	–	–
r. Welding	2	0	2	–	–	–	3	0	3	–	–	–	3	0	3	–	–	–	5	0	5	2	0	2	–	–	–	–	–	–
s. Wood Pattern Making	4	0	4	2	0	2	4	0	4	1	0	1	3	0	3	1	0	1	3	0	3	2	0	2	–	–	–	–	–	–
t. Tool & Die Making	–	–	–	–	–	–	–	–	–	–	–	–	1	0	1	–	–	–	2	0	2	–	–	–	2	0	2	–	–	–
Total (5)	168	57	225	62	25	87	152	51	203	58	21	79	153	44	197	50	10	60	144	35	179	38	10	48	153	11	164	3	0	3

PROGRAM/CURRICULUM	1974-1975 ENRLMENT			1974-1975 GRADUATES			1975-1976 ENRLMENT			1975-1976 GRADUATES			1976-1977 ENRLMENT			1976-1977 GRADUATES			1977-1978 ENRLMENT			1977-1978 GRADUATES			1978-1979 ENRLMENT			1978-1979 GRADUATES		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
6. BSIE-Women's Vocational Course**	0	76	76	-	-	-	0	71	71	0	10	10	0	73	73	0	40	40	1	76	77	0	40	40	-	-	-	0	2	2***
7. BSIE-Home Arts****	-	-	-	-	-	-	0	39	39	-	-	-	1	93	94	-	-	-	0	95	95	-	-	-	-	-	-	-	-	-
8. BSIE-Home Economics*****	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	272	272	-	-	-
9. BSIE-Art Education	4	13	17	-	-	-	5	18	23	1	4	5	3	14	17	0	5	5	7	8	15	2	1	3	8	11	19	-	-	-
Total (C)	389	365	754	103	73	176	325	374	699	100	79	179	304	405	709	89	101	190	280	343	623	66	87	153	326	431	747	9	11	20
Graduate Program																														
Master of Arts in Industrial Education (M.A.I.E.)	133	116	249	23	5	28	122	141	263	25	4	29	123	128	251	35	8	43	97	74	171	36	9	45	99	113	213	17	1	18
Doctoral Program																														
Ed. D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	12	-	-	-	8	4	12	-	-	-
University High School	311	39	350	57	8	65	332	40	372	72	11	83	393	45	438	85	11	96	429	45	474	51	11	62	425	64	489	-	-	-
Special Courses																														
1. Bakery Class	88	136	224	78	133	211	72	153	225	65	133	198	54	102	156	53	99	152	116	208	324	112	202	314	7	38	45	6	36	42
2. Garments School	3	77	80	2	73	75	3	81	84	0	60	60	3	49	52	2	46	48	0	55	55	0	46	46	0	35	35	0	19	19
Total (V)	91	213	304	80	206	286	75	234	309	65	193	258	57	151	208	55	145	200	116	263	379	112	248	360	7	73	80	6	55	61

SUMMARY

Undergraduate																														
A. 2-yr Technical Courses	1936	211	2147	382	19	401	2145	231	2376	434	40	474	2257	200	2457	436	38	474	2462	280	2742	422	65	487	2462	235	2697	99	5	104
B. 3-yr Technicians courses	1487	10	1497	118	0	118	1549	10	1559	193	0	193	1437	19	1456	202	2	204	1395	12	1407	195	3	198	1424	9	1433	22	0	22
C. 4-yr Teacher	389	365	754	103	73	176	325	374	699	100	79	179	304	405	709	89	101	190	280	343	623	66	87	153	326	421	747	9	11	20
Total (I)	3812	586	4398	603	92	695	4019	615	4634	727	119	846	3998	624	4622	727	141	868	4137	635	4772	683	155	838	4212	665	4877	130	16	146
Graduate Program	133	116	249	23	5	28	122	141	263	25	4	29	123	128	251	35	8	43	97	74	171	36	9	45	99	113	213	17	1	18
Doctoral Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	5	12	-	-	-	8	4	12	-	-	-
University High School	311	39	350	57	8	65	332	40	372	72	11	83	393	45	438	85	11	96	429	45	474	51	11	62	425	64	489	277	33	310
Special Courses	91	213	304	80	206	286	75	234	309	65	193	258	57	151	208	55	145	200	116	263	379	112	248	360	7	73	80	6	55	61

Legend:

* Graduates as of October 24, 1978 only (1st semester graduates)
** BSIE-Women's Vocational Course major was offered school year 1973-74. Prior to SY1973-74 BSIE-Foods and Garments major were offered.
*** Started as BSIE-Foods major (old curriculum)
**** BSIE-Home Arts was offered school year 1975-76.
***** BSIE-Home Economics was offered SY 1978-79. BSIE-Foods and Garments major were phased out.
****** The Doctoral Program was offered Summer 1978.

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

(Formerly Philippine College of Arts and Trades)

Manila

ENROLMENT DATA - 1st Semester, SY 1980-1981*

PROGRAM	DAY			EVENING			TOTAL			SUM
	Male	Female	Total	Male	Female	Total	Male	Female	Total	TOTAL
A. Secondary Education	334	53	387				334	53	387	387
B. College										
Undergraduate										
a. 2yr Technical	1110	132	1242	1303	83	1386	2413	215	2628	
b. 3yr Technician	1000	0	1000	887	12	899	1887	12	1899	
c. 4yr Teacher Education (BSIE)	141	288	409	112	65	177	253	333	586	
d. 5yr Engineering	87	0	87	34	0	34	121	0	121	
e. BS in Architecture	1	0	1	27	9	36	28	9	37	
Cross Enr. in Rel. Subj.				0	19	19	0	19	19	
Cross Enr. in ROTC				60	0	60	60	0	60	
Special Courses (Bakery & Garments)				31	10	41	31	10	41	5391
C. Graduate School										
a. MATE	84	56	140				84	56	140	
b. MAT	6	111	117				6	111	117	
c. Ed.D.	29	19	48				29	19	48	305
	2792	659	3431	2454	198	2652	5246	837	6083	6083

*Registrar's Office Enrolement Figures as of July 1, 1980

Total Enrolment for Day Classes	3431
Total Enrolment for Evening Classes	2652
Difference	779

8. ＴＵＰ工学部にて使用中の主な機材リスト

TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES

Manila

EQUIPMENTS BEING USED IN MECHANICAL ENGINEERING

1. Lathe Machine
2. Shaper Machines
3. Drill Press Machines
4. Grinding Machines
5. Surface Grinder
6. Vertical and Horizontal Milling Machines
7. Turret Lathe Machine
8. Power Saw
9. Bench Vise
10. Drill Press Vise

EQUIPMENTS USED IN CIVIL ENGINEERING

1. Universal Testing Machine
2. Automatic Cement Setting Recorder
3. Vicat Apparatus
4. Abrassion Testing Machine
5. Penetrometer
6. Sieve Shaker
7. Beam Molds
8. Concrete Cylinder Molds
9. Airmeter for Concrete
10. Special Balance for Specific Gravity of Aggregates
11. Shrinkage Limit Apparatus
12. Y-level
13. Transit

EQUIPMENTS USED IN ELECTRICAL ENGINEERING

1. V.O.M. (Volt Ohmmeter)
2. Oscilloscope
3. Tachometer
4. Ohmmeter
5. Ammerter
6. Clamp-Ohmmeter
7. Modular type AC-motor
8. Modular type DC-motor
9. Disc/drum Ormature
10. Japanese accross the line magnetic starter
11. U.S. across the line magnetic starter
12. Growler

9. フィリピン国の教育制度概要（英文）

PPD/PS/MEC
Revised 1-15-79

A GLIMPSE ON THE EOUCATIONAL SYSTEM OF

THE PHILIPPINES

Plcnning & Programming Division
Planning Service
Ministry of Education & Culture
Manila
November, 1977（昭和52年）

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INFORMATIONAL BACKGROUND

Geographical and Cultural Perspective

The Philippines is a cluster of 7,100 islands of which eleven account for ninety percent of the total land area of 291.410 square kilometers (11,830 square miles). The archipelago extends 1,520 miles from the north to south and 688 miles from east to west. The country may be grouped into four huge divisions based on their geographical location; Luson in the north; Visayas in the center; Mindanao and Sulu in the south; and Palawan in the west.

The Philippines is comprised of 45,000 barangays, 1.495 municipalities, 60 cities, 73 provinces, and 2 sub-provinces.[1] A province may have one or more chartered cities, which are politically and administratively independent from the provinces or municipalities. Small political groups called barangays are organized in all localities throughout the archipelago. The total population of the country estimated to be 46.7 million has an annual growth rate of 2.89 percent, and a density of 141.1 persons per square kilometer. There are at least fifteen foreign languages and 66 native dialects spoken. Tagalog which is the basis of the national language - Philipine is spoken by 55.2 percent. Of the total populace, 85 percent professes the Roman Catholic religion while the remaining 15 percent constitute the various religious sects in the country.[2] The people are endowed with a rich cultural heritage, which in further enriched through contacts with foreign peoples. The founding of thc famous Cultural Center of the Philippines and the Folk Arts Theatre awakened the cultural consciousness of the people in preserving, promoting, enchancing, and developing its splendid culture.

Evolution of our Educational System

A notable attempt to reform the educational system of the Philippines took place when the Educational Decree of 1863 was promulgated on December 20, 1863. The decree contained three important features, namely: the establishment of a complete system of education in the country comprising of elementary, secondary, and collegiate levels, the provision for government supervision and control of

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[1] Ministry of Local Government Statistics as of January 1979.

[2] Philippine Yearbook 1977. National Economic and Development Authority, National Sensus and Statistics Office, Manila.

these schools, and the establishment of teacher-training institutions. Another significant event occured when the Philippine Cormission in 1901 passed Act No. 74, that created the Department of Public Instruction charged with the major responsibility to insure a system of free public education.

During the Commonwealth Government a reorientation of educational policies, plans and programs was made in order to carry out the educational mandates of the 1935 Constitution. Article XIV Sec. 5 of this Constitution states in part ... "the Government shall establish and maintain a complete and adequate system of public education and shall provide at least free public primary instruction and citizenship training to adult citizens."

Another significant development was the passage of Educational Act of 1940 which shortened the elementary course from seven to six years in order to accommodate more children of school age. It also provided for the system of public elementary education and its financing. This act also allowed the introduction of the so-called double-session wherein the teacher has to handle one class in the morning and another one in the afternoen.

However, in 1953 another low was enacted which provided for, among others, the restoration of the seventh grade in the elementary education level. This provision, however, has not as yet been implemented because of financial constraints except in a few private schools.

Since then our educational system has experienced evolutionary changes as a consequence of the global war.

Organizational Set-up of the System Before the Reorganization

Before the implementation of the Integrated Reorganisation Plan in 1975, the Department of Education was headed by a Secretary who was a Cabinet member. He was assisted by an Undersecretary of Education in managing the affairs of the Department. A Staff was provided them to ensure efficiency of service. This included the Administrative Office, Technical, and Advisory Staff, Planning Division, Budget and Finance Division, Accounting Division, Division of Spanish Language and Culture, Board on Textbooks, and the Philippine Historical Committee. Down the lino were the three promotional bureaus namely: the Bureau of Public Schools, Bureau of Vocational Education and Bureau of Private Schools responsible for the operation of the levels of education depending on their line of specialization and the type or classification of the school.

In administrative practice, the Secretary of Education delegated to the three Bureaus the authority and responsibility for the general discharge of the Department's functions and responsibilities notwithstanding his decisive power on matters of education budget, appointment of certain key personnel, and issues relative to basic educational policy. Each bureau had a system of superintendency in-charge of school management in the provincial level and supervisorship responsible for various aspects of school supervision.

Educational Aims As Promulgated by the Board of National Education

Pursuant to the statutory provisions of R.A. 1124 enacted in 1954, the Board of National Education also known as the policy-making body of the Department was empowered to promulgate general educational policies and direct educational interests of the nation.

The board formulated and approved the Revised Philippine Educational Program which took effect beginning the school year 1957-1958, with the following fundamental objectives of education and the specific objectives of the three levels of education:

Fundamental Objectives of Education[4]

1. To inculcate moral and spiritual values inspired by an abiding faith in God.
2. To develop an enlightened, patrietic, useful and uprimpt citizenry in a democratic society.
3. To instill habits of industry and thrift and to prepare individuals to contribute to the economic development and wise conservation of the nation's natural resources.
4. To maintain family-solidarity, to improve community life, to perpetuate all that is dedirable in our national heritage, and to serve the cause of world peace.
5. To promote the sciences, arts, and lettera for the enrichment of life and recognition of the dignity of human person.

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[4] General Educational Policies, A Report of the Board of National Education, 1955-1957.

Specific Objectives of Elementary Education

"The elementary school should offer adequate education for our children to prepare them for democratic citizenship. It should give instruction in basic knowledge, develop skills and attitudes, and inculcate ideals necessary for the development of an enlightened, patristic, useful and upright citizenry in a democracy. Giving emphasis to the culture, desirable traditions, and virtues of our people, it should prepare the child for effective participation in his community and for a better understanding of an expanding society."

Specific Objectives of Secondary Education

"The secondary school shall continue the unifying functions of elementary education by providing general education and shall seek to discover the varying abilities, interests and aptitudes of the youth, and offer courses in the different fields of productive endeavor according to the talents of the youth in the light of community needs. It shall also initiate a program designed to develop community leadership.

Taking into consideration the economic needs of the country, the school must cultimate vocational efficiency which will hold the students become effective members of their family and the community. For those who will continue in the colleges and universities the school must offer courses to prepare the students for an effective study in the institutions of higher learning."

Specific Objectives of Higher Education

"Higher education shall be concerned with the conservation, transmission and extension of human knowledge, with the preparation of leaders in arts, sciences and the professions, and with the preservation and enrichment of Philippine culture. Leadership requires the highest quality in our human resources; and extension of the functions of knowledge demands a high degree of competence and specialized lines of study. Toward this end, the government should extend every measure of assistance to implement the constitutional mandate for the promotion of arts, sciences, and letters.

To be maximum service to society, higher education should be allowed to grow and develop in an atmosphere of freedom and should always be guided by an enlightened love of country and fellowmen."

The educational objectives and aims promulgated by the Board provide school officials and those who were involved in educational endeavors the right direction and proper guidance in the attainment of national goals, however, as the years went by, the educational system was gaining criticiam. The administrative practices and the educational programs failed to respond to the fast societal changes which were greatly influenced by technological revolution and advancement of scientific knowledge. The organizational structure was too centralized and bureaucratic which hampered the growth of the socio-economic development of the country. There was a need to evaluate the national development goals and the objectives of the educational system.

The President of the Philippines after a careful analysis of the country's critical situation and responding to the overwhelming clamor for change from the perent and student populace, created the Presidential Commission to Survey Philippine Education (PCSPE) pursuant to the Executive Order No. 202 dated December 24, 1969. After a year's study of the educational system, the Commission came up with policy and program recommendations based on its findings. These included the re-statement of national development goals and educational aims.[5]

National Development Goals[6]

1. To achieve and maintain an accelerating rate of economic development and social progress;

2. To assure maximum participation of all the people in the attainment and enjoyment of the benefits of such growth; and

3. To strengthen national consciousness and promote desirable cultural values in a changing world.

To attain these national development goals, the following objectives of the educational system are stated:

a. Provide for a broad general education that will assist each individual, in the peculiar ecology of his own society,

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[5] Report of the Presidential Commission to Survey Philippine Education (PCSPE)

[6] Declared in the Presidential Decree No. 6-A, known as the Educational Development Decree of 1972.

(1) attain his potential as a human being;

(2) enhance the range and quality of individual and group participation in the basic function of society; and

(3) acquire the essential educational foundations for his development into a productive and versatile citizen.

b. Train the nation's manpower in the middle level skills required for national development;

c. Develop the high-level professions that will provide leadership for the nation, advance knowledge through research, and apply new knowledge for improving the quality of human life; and

d. Respond effectively to the changing needs and conditions of the nation through a system of educational planning and evaluation.

EDUCATIONAL SYSTEM UNDER THE NEW SOCIETY

In adapting the educational system to the needs of our people, our educational leaders used utmost care and deliberation. General policies, administrative plans, teaching and supervisory procedures have been modified or adopted following the recommendations of experts Practices found to be profitable in other countries have been incorporated into the school system only after extensive study and experimentation and rigorous scrutiny. In other words, educational revolution was initiated when the President of the Philippines issued Presidential Decree No. 6-A on September 29, 1972. This Decree authorized the undertaking of educational development projects and provided the mechanics of implementation and financing. In this connection, a ten-year national education development program has been formulated touching on all aspects of the educational system.

The New Society, as envisioned by the President, has direct bearing and strong implication to the country's educational system. It is premised on the framework that education should be an integrated systems as provided for in Section 8 sub-section 1 of Article XV of the New Philippine Constitution. It has also adopted the acronym, PLEDGES, which means, Peace and Order, Land Reform, Economic Development, Development of Moral Values through Educational Reform, Government Reorganization, Employment and Manpower Development, and Social Services as a means of directing all strategies in achieving the goals set and defined.

The New Organizational Structure

Presidential decree No. 1 issued by the President of the Philippines on September 24, 1972, provided for the Reorganization of Government to achieve greater economy, efficiency and simplicity in government operations. Accordingly, the Department of Education and Culture took steps for the implementation of P.D. No. 1 otherwise known as the Integrated Reorganization Plan.

Major changes were effected in the Department of Education and Culture with the final implementation of the reorganizational plan on July 1, 1975. Under the Plan, the Department has been decentralized; decision making is now shared by the thirteen regional directors who head their respective regional offices that were established throughout the country. These directors exercise line and command functions reporting directly to the Secretary of Education and Culture. As shown in the organizational chart (Figure 1), the Department is headed by the Secretary who is at the same time, a cabinet member. The Department Secretary is assisted by the two undersecretaries (one career and one political) and the immediate staff personnel in managing the affairs of the Department.

On June 2, 1978, the President of the Philippines issued Presidential Decree No. 1397 which provides, among others, for the conversion of Departments into Ministries. Accordingly, the Department of Education and Culture is now known as the Ministry of Education and Culture (MEC) and its head is a Minister. Likewise, the title, Undersecretary of Education and Culture is changed to Deputy Minister of Education and Culture.

The Minister is responsible for the adoption and promulgation of rules and regulations necessary to carry out ministerial policies and objectives, and exercises general supervision and control over the Staff Bureaus, Services and other Agencies of the Ministry. Furthermore, his Offices are entrusted the following functions: (a) Plan, develop and implement programs on education and culture based on education objectives and policies set forth and approved by the National Board of Education; (b) Administer the public school system in the Philippines; (c) Coordinate and work closely with other instrumentalities of the government on all matters that pertain to the educational and cultural development of national minorities; and (d) such other functions as may be assigned by law.

Offices Under the Office of the Minister

Under the Office of the Minister are the offices of the two Deputy Ministers, the Offices of the three Assistant Ministers, and the Office of the Head Executive Assitant.

Other offices under the Office of the Minister and their functions are:

The National Board of Education, has the following members as provided in the Integrated Reorganization Plan and as amended by Presidential Decree No. 983: The Minister of Education and Culture as Chairman; the Director-General of the National Economic and Development Authority; the Minister of the Budget Commission; the President of the University of the Philippines; the Chairman of the National Science Development Board; the Deputy Minister of Education and Culture; and three prominent citizens, at least one of whom shall represent non-governmental educational institutions. The Director of the Bureau of Elementary Education, the Director of the Bureau of Secondary Education, and the Director of the Bureau of Higher Education shall also sit in the Board as non-voting members. This august body performs the following functions: (1) formulate the objectives and basic policies of education for children and adults in conformity with the provisions of the Constitution; (2) coordinate the objectives, functions and activities of different types and kinds of educational institution in the Philippines; (3) set up general goals of accomplishments for the entire Philippine school system; (4) establish guidelines, policies, and criteria on the basis of which the examination, evaluation, and approval of textbooks by the Board on Textbooks shall be made; (5) compile educational statistics, keep records on the education, conduct researches, surveys, and studies or educational conditions and problems, evaluate the effects of national education policies, and undertake such other activities as to effectively carry out the purposes of Republic Act No. 4372; (6) to secure data and information from all government offices and entitles and educational institutions, and to consult and confer with the officers and personnel thereof, on such matters as may be necessary for the Board to discharge its functions.

Relative to these functions, the different sectors of society are consulted on matters of educational policy as well as on problems and issues in education. The Board in the performance of its functions constitutes study committees that are assigned to identify educational problems and to work out practical and viable solutions to these problems. Reports of these committees are deliberated on by the Board Members. If the need arises, the Board conducts

hearings or meetings and invites educational associations, groups or individuals for their opinion, comments and recommendations regarding policy modifications or policy formulation. Afterwards, these policies are referred to the different implementing agencies.

The Textbook Board selects and approves textbooks to be used in public, as well as private, elementary and cecondary schools.

The Educational Development Projects Implementing Task Force (EDPITAF) was created conformably to Presidential Decree No. 6-A issued on September 29, 1972. This Office is responsible for implementing and supervising foreign-assisted development projects and other development projects which may be assigned to it by the Minister.

The Professional Boards - the Board of Medical Education, council of Pharmaceutical Education, Council of Medical Technology Education and the Board of Accounting Education have uniform power and functions in prescribing minimum requirements for their respective courses. The policies, rules and regulations formulated by these Boards are subject to the concurrence of the Minister.

The staff services comprise the following: Planning Service, Financial and Management Service, Administrative Service, Information and Publication Service.

The Planning Service

Educational planning is very new in the Philippines compared to other developing Asian countries. It started its venture in 1969 when the Office of the Planning Division was established under the Office of the Secretary. Its main task then was to formulate a comprehensive plan which would provide guidelines for all levels of education. However, due to some impediments it has not succeeded its program of activities before the New Society was established.

The advent of the New Social Order recognized educational planning as an important factor toward the attainment of national development goals and thus gained impetus in all educational endeavors. Subsequently when reorganization of the educational system took place in July 1975, the function of the planning division was emphatically stressed with the organization of a Planning Service together with the other services.

One of the provisions of Presidential Decree No. 6-A, states that education

should respond effectively to the changing needs and conditions of the nation through a system of educational planning and evaluation. Consequently, the Ministry of Education and Culture, through the Planning Service, has continuously exerted efforts to give deeper meaning and direction to educational planning in order to make education more responsive to the challenges of our fast changing social order. The Office of the Planning Service is responsible for providing the Ministry of Education and Culture with economical, efficient and effective service relating to planning, programming and project development. In the performance of their primary function, the following three divisions, two attached units, and the National Board of Education (NBE) Secretariat are under this Office work closely and cooperatively towards the achievement of their common goal: Planning and Programming Division - Curriculum Coordinating Unit, Project Development and Evaluation Division, Research and Statistics Division - Management Imformation System (Data Bank) and National Boerd of Education Secretariat.

The Financial and Management Service

The Financial and Management Service is solely responsible for providing the Ministry with staff advice and assitance on Budgetary, financial and management improvement. It has a Budget Division, Accoounting Division, Management Division and Special Education Fund Division, each of which has its own area of responsibilities.

Since the financial management plays a contibutary factor in the successful operation of the educational system, this service has to plan well the budget of the Ministry to ensure the efficiency of the programs and projects outlined by the Planning Service and Regional Offices.

The Administrative Service

The Administrative Service comprises of the Personnel Division, Legal Division, and General Services Division, which have their corresponding staff. It is the duty and responsibility of the Service to provide the Ministry with economical, efficient and effective services relating to personnel, legal assistance, records, supplies, equipment, collection, disbursements, security, and custodial work.

The Information and Publication Service

-- The Information and Publication Service is charged with responsibilities in implementing programs and projects designed to disseminate proper information on the activities of the Ministry to the public and to all other agencies concerned, both local and foreign. It prepares, publishes, and distributes materials such as brochures, reports and pamphlets and coordinates with the Ministry of Public Information in the Office of the President of the Philippines, the mass media and other government entities. Composing of the Information Division, Materials Production and Publication Division and Textbook Production Division, the Service also takes charge of working arrangements for the public relation activities of the Minister, Deputy Minister and other Ministry officials.

The Staff Bureaus: Elementary, Secondary and Higher Education

The defunct three promotional staff bureaus, namely: the Bureau of Public Schools, Bureau of Vocational Education and the Bureau of Private Schools are replaced with the Bureau of Elementary Education, Bureau of Secondary Education and the Bureau of Figher Education, respectively, which are directly responsible in the performance of all the activities relative to their level of jurisdistion both government and private institutions. Each Bureau is managed by a Director who is competent in his area of specialization.

The Bureau of Elementary Education is charged with the formulation and development of educational policies and programs with respect to pre-elementary and elementary education in the country. It conducts studies for educational policy formulation and standards for this level. It assesses and evaluates the aims and objectives, and provide technical assistance to the Minister of Education and Culture on matters pertaining to elementary education. In its developmental work, it undertakes curricular design which includes preparation of instructional materials and instruments to evaluate results of instructions, undertakes researches and studies on the curriculum for improvement and up-grading, provide technical assistance on the use of media and other instructional technologies, design pilot-type projects in teaching techniques and other curriculum innovations. It also develops plans and programs to upgrade and improve the quality of the staff. Moreever, its farculates standards for the quality and quantity of physical facilities.

The Bureau of Secondary Education formulates and develops policies, plans, programs and standards for the second level, including adult education. It

provides working guidelines to the schools to ensure that the objectives of the level pertaining to preuniversity preparation and to skills training for employment are adequately met. Another salient function it performs is to evaluate policies, plans, programs and standards on curriculum development, staff development, and physical plants of the secondary level.

Furthermore, it provides technical assistance on the use of instructional technologies. It also directs researches on the sociological and psychological context of the Philippine Youth and the demands of industry which will significantly lead in the identification of basic skills and knowledges needed in the structural integration of secondary curriculum for the high school going-age population.

The Bureau of Higher Education formulates and evaluates programs on higher education and scholarships; establishes standards for all universities, colleges and other post-secondary institutions of learning; provides technical assistance to encourage institutional development programs and projects; compiles data on higher education; provides secretariat services to the Board of Higher Education and other professional boards; and carry over functions of the former Bureau of Private Schools on matters pertaining to applications for increase in tuition fees, issuance of special orders, issuance of study permits to foreign students, application for offering courses on the tertiary level, and placement examinations. Another major cunction it performs is to develop plans and programs to upgrade quality of teaching and non-teaching and school executive staffs.

The three bureaus, in their desire to be effective and responsive to the socio-economic needs of the new society, are coordinating with the Planning Service of the Ministry of Education and Culture and the level specialists in the regional and provincial or city offices in the implementation of their programs and projects.

The Centers and Units include the following: Nationa Research and Development Center for Teachers Education, School Health and Nutrition Center, National Scholarship Center, Social Studies Center, National Educational Loan Assistance (Study Now, Pay Later) Center, National YCAP Coordinating Center, National Educational Testing Center, Child Youth Research Center, Foreign Schools and Students Unit, Physical Education and Sports Development Unit, and Population Education Program Unit.

The National Research and Development Center from Teacher Education undertakes research and development programs along curriculum and methodology in teacher education and the documentation and publication of the research studies. It is in charge of the participation of the Ministry of Education and Culture (MEC) in such international organizations as the UNDP, UNESCO, UNICEF, SEAMEO and others.

The School Health and Nutrition Center formulates policies, plans, programs and projects on school health, nutrition, school feeding and environmental programs and prjects of the Ministry. It coordinates with international and national agencies and offices involved in these programs and projects.

The National Scholarship Center consolidates, integrates, systematizes and administers all scholarship programs, both public and private as maybe entrusted. It also administers the national cultural study grant program as provided by law. Furthermore, the office provides functional guidance services for personal and academic needs of the grantees and extends job placement assistance to scholars and grantee graduates.

The Social Studies Center prepares instructional materials on social studies education. It is charged with the responsibility of improving instruction through a wide variety of quality instructional materials, competent personnel in curriculum development, methodology and research-based social studies program.

The National Educational Loan Assistance (Study Now, Pay Leter) Center implements policies enunciated by the Educational assistance Policy Council in accordance with P.D. No. 932, Educational Assistance Act of 1976. It assists the Council in the formulation of guidelines pertaining to the financial assistance scheme for the economically disadvantaged but potentially bright students to pursue higher education.

The National Youth Civic Action Program (YCAP) Coordinating Center formulates plans and strategies to continuously upgrade the quality of YCAP projects/activities. It also coordinates and provides linkages with all agencies involved in the program. All these activities are geared towards the development of rural and depressed areas, and strengthen the program by fostering youth civic consciousness and deeper sense of social responsibility.

The National Educational Testing Center (NETC) has its major function the

giving of the National College Entrance Examination. As a result, students are channeled to more relevant courses in college. It envisions to perform leadership role in the area of educational measurement and evaluation in the country.

The Child and Youth Research Center is one of the arms of the MEC in the field of research. It conducts researches on the development of Filipino children and youth which may be used as a basis for a more effective educational system.

The Foreign Schools and Foreign Students Unit performs policy and program development functions for the Minister relative to the establishment, operation and supervision of all former Chinese schools and foreign schools operated in the Philippines by virtue of our cultural treaty agreements with the countries concerned. It extends services to all foreign students studying in the Philippines in matters of visas, immigration clearance and study permits.

The Physical Education and Sports Development Unit provides programs coordination, direction, and evaluation of instructions in physical education, including scouting, and sports in schools, in consonance with P.D. No. 604, and the national physical fitness and sports development program.

The Population Education Program Unit provides leadership in population education in the school system by preparing and producing instructional materials, conducting pre-service and in-service training of teachers and other school personnel, and undertaking research studies in population education. It maintains linkages with both local and international agencies on population education.

Cultural Agencies

The Cultural Agencies which have the same category as the staff bureaus of the Ministry aim to strengthen the national identity. Specifically, they envision to preserve and enrich the nation's cultural heritage, customs and traditions; and to promote consciousness and awareness of cultural values and heritage in every Filipino.

The realization of these objectives are made possible through the different cultural undertakings. Cultural shows reflective of the customs, traditions, beliefs and interests of the different ethnic communities of the country are revived. Researches and projects to further enrich the country's cultural

heritage and develop our identity as a people are pursued. Historical landmarks, shrines and other cultural properties are identified, restored and preserved as instruments to further deepen the people's appreciation for the coutnry's cultural heritage and traditions. Likewise, cultural information and activities are published and disseminated. The development and propagation of Pilipino Language is given further impetus. These are but few of the many strategies employed to discover and experience the underlying cultural identity, the original fabric of the Filipino soul.

Regional Offices

The Ministry of Education and Culture which is the implementing arm of the National Board of Education has its regional, provincial, and city offices situated in the thirteen (13) geographical regions of the archipelago. The regional offices and its headquarters are as follows:

Region	I	:	San Fernando, La Union
Region	II	:	Tuguegarao, Cagayan
Region	III	:	San Fernando, Pampanga
Region	NCR*	:	Banaue St., Quezon City
Region	IV	:	Banaue St., quezon City
Region	V	:	Legaspi City
Region	VI	:	Iloilo City
Region	VII	:	Cebu City
Region	VIII	:	Tacloban City
Region	IX	:	Zamboanga City
Region	X	:	Cagayan de Oro City
Region	XI	:	Davao City
Region	XII	:	Cotabato City

They are the paradigms of the Ministry proper each of which is administered by a Regional Director who is appointed by the President of the Philippines through the recommendation of the Minister. The Regional Offices are responsible for the general supervision, direction, evaluation and coordination of operations and activities within the regions. Particularly, they perform the following functions:

1. Implement laws, policies, plans, programs, rules, and regulations of the

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* NCR-National Capital Region

Ministry in the region;

2. Formulate and evaluate the execution of plans and programs in the regions;

3. Prepare and submit plans and programs for the regions for approval and/or incorporation in the overall program of the Ministry;

4. Provide economical, efficient, and effective service to the people;

5. Coordinate with regional officers of other ministries, bureaus, and agencies in the area, and perform other functions as may be provided by law.

Each regional offices has an Administrative Division, a Finance and Budget Division, an Elementary Education Division, a Secondary Education Division, a Higher Education Division, and provincial or city school divisions with corresponding duties and responsibilities.

Provincial and City School Divisions

There are 125 provincial and city school divisions in the country. Every school division is managed by a Division Superintendent of Schools. With the cooperation of his personnel, namely: division office staff personnel, municipal or district supervisors, principals, heads of schools and teachers, the Superintendent issues policies, programs and guidelines within the context of the policy promulgated by the National Board of Education (NBE) and the MEC Regional Off-ice. The nature of his duties and responsibilities compels him to ensure cooperation among the various government agencies in the province or city in the realization of their objectives within the context of the national development goals.

Since the implementation of government reorganization, decentralization of, power and responsibility has been experienced by the whole populace. It is with conviction that the present organization and management of the educational system and the attainment of the national development goals will indubitably be realized which would redound to the socio-economic development and progress of the country as a whole.

EDUCATIONAL LADDER OF THE FORMAL SYSTEM

The formal system of education in the Philippines (chart 2) primarily consists of the three levels, namely: elementary, secondary and tertiary.

The elementary education program is designed to provide six years of elementary broad general education that will primarily develop all the knowledge, skills, and attitudes which are basic for personal development and modern living in an expanding society. By law (Republic Act No. 896 known as the Elementary Education Act of 1953), elementary education is up to Grade seven but because of government's financial constraints the public schools are implementing the six years elementary education program. Only very few affluent private schools have implemented the restoration of the seventh grade.

Complementary to this basic education is the offering of preschool education to very young children ranging from four to six years, mostly by private schools.

The revised four-year secondary program is a continuation of general education that started in the elementary level and aims to provide students with necessary occupational skills, knowledge, and information required for possible employment; preparation for a vocation; and preparation for higher education. The curriculum of this revised program is given relative flexibility for the schools to choose their optional academic or vocational offerings depending on the needs of the area concerned.

The tertiary/higher education level covers all programs of instruction in both public and private schools, colleges and universities which require graduation from the formal secondary course for admission. Course offerings are classified into major fields of study such as agriculture, engineering/ trades, medical science, natural sciences, social sciences, humanities, education, and fine arts. Most of them require four years of study, although some courses are being shortened or lengthened in answer to the manpower requirements of the country.

Moreover, serveral public and private institutions in the tertiary level are now offering graduate courses relevant to the socio-economic development of the country. This is also in line with the government thrust of developing high level professionals which will provide leadership to the nation.

The Chart below depicts the Philippine educational ladder.

Yrs. in School	Normal Age	Level	Graduate Post-Graduate Studies
8	24		
7	23		COLLEGES/UNIVERSITIES
6	22	THIRD Higher Education	General Higher Education
5	21		Vocational/Technical Education
4	20		Medical Law Other professional
3	19		courses
2	18		
1	17		
4	16		
3	15	SECOND Secondary Education	SECONDARY SCHOOLS
2	14		General Education
1	13		Vocational/Technical Secondary
6	12		INTERMEDIATE SCHOOLS
5	11	FIRST Elementary Education	PRIMARY SCHOOLS — COMPULSORY EDUCATION
4	10		
3	9		
2	8		
1	7		
	6		
	5		
	4		
	3		KINDERGARTEN AND NURSERY

As shown in the chart, the legal and age requirement for admission in the first level is seven (7) years old. Ages ranging from 7 to 12 cover attendance in the first level; 13 to 16 years old in the secondary level and 17 to 29 years old or up in the tertiary or third level.

In school year 1976-77 the estimated age population of 7-12 years old was 16.2 percent; 13-16 years old 9.9 per cent; and 20-24 years old 7.4 per cent of the total school age population which is 42.6 per cent.

The percentage of distribution of school population in terms of both government and private schools during the school year 1975-76 is shown in the

table:

Level of Education	Gov't	Private	Total
Elementary	94.9%	4.1%	100%
Secondary	47 %	53%	100%
Tertiary	14.9%	85.1%	100%

It could be gleaned from the table that the greatest bulk of enrolment in the government school is in the first level, while the private institutions cater more to the secondary and teritary levels.

NON-FORMAL EDUCATION

Non-formal Education or Adult and Community Education

The Office for the Non-Formal Education of the Ministry of Education and Culture was oreated under P.D. No. 1139 on May 13, 1977. President Ferdinand E. Marcos appointed an Undersecretary (Deputy Minister) for Non-Formal Education. The Office is entrusted with the following functions:

1. Advise and assist the Minister of the MEC in the formulation and implementation of Non-Formal Education objectives and policies.
2. Oversea non-formal education operational activities of the Ministry for which she shall be responsible to the Minister.
3. Coordinate the programs and projects of non-formal education and be responsible for the economical, efficient and effective administration/ supervision of non-formal education.
4. Serve as Deputy of the Minister in matters relating to non-formal education.
5. Perform such other functions as may be provided by law or as may be directed by the President or the Minister.
6. Coordinate with other agenoies.*

Non-formal education is any organized, systematic, educational activity carried on outside the framework of the formal system to provide selected types of learning to particular sub-groups in the population, adults, as well as children.

The education of adults and out-of-school youth is accelerated through

* Primer of Non-Formal Education, May, 1977.

the work-oriented approach. This involves: (1) the development of functional literacy so as to equip individuals with fundamentals of arithmetic and computation, health, sanitation and citizenship; (2) a program of continuing education which provides courses in vocational, cultural, recreational and social (population and family planning) education.

The acceleration and implementation of the non-formal education are in classes like: agricultural extension and farmer training programs, adult literacy programs, occupational skills training given outside the formal system, youth clubs with substantial educational processes, community programs of instruction in health, nutrition, family planning, cooperatives, etc. on-going projects like: the nationwide School-on-the Air Program called "Lingap ng Pangulo sa Barangay", literacy classes, and adult and community education classes throughout the country are concrete indicators towards improving the quality of life of the people.

The campaign to upgrade manpower skills for industry, improve the literacy rate, and re-orient the people towards the new values posed by the present society are goals which the non-formal education should realize. Thus, linkages with various government agencies, private sectors and religious institutions are established to insure effective and fruitful implementation of the program.

HIGHLIGHTS OF EDUCATIONAL INNOVATIONS

Education in this country has undergone metamorphic stages. It is in constant search of new solutions to its problems of providing uqality education and to meet the ever-increasing demands of the school population. However, the resources necessary to carry out such solutions have always been inadequate.

A spark of new life was perceived when the President of the Republic declared Martial Law. Educational innovations have been adopted to make education more attuned to the developmental goals of the government.

The redirection of the educational system involves the readjustment of the primary components of the system, namely: the types of courses and curricular content, qualifications and training of the professional staff, the quality of students, instructional media and techniques. Intensifications and reinforcements are exercised in the system. Foremost among these are:

1. In general education, innovations such as the continuous progression scheme, the new social studies, bilingual education and the process approach in science, learning continuum were introduced in the elementary, whereas, the revised secondary school program (integration or related areas of learning, prolonging of time allotment from 40 minutes to 1 hour, and the giving of emphasis to vocational training for students) has been fully implemented in the secondary level. In higher education, emphasis has been given to curricular offerings responsive to the socio-economic development of the country.

2. The development of a corps of educators and reorientation of administrators who shall assume leadership roles for the implementation and improvement of programs (both in formal and non-formal) through the continuing Junior Executive Training (JET).

3. Training programs for both elementary and secondary teachers are conducted to enable them to be better equipped to perform their functions as agent for change in a developing society like the Philippines.

4. To strengthen youth participation in national development, the YCAP has been given greater impetus in all levels of education as a means of channelling the energies of the socio-civic and community-oriented activities.

5. The National College Entrance Examination (NCEE) has helped in channelling students to more relevant courses in the country's development.

6. To boost the administration's peace and order drive in the South, special study grants for rebel-returnees have been awarded to hundreds of them.

7. Thousands of economically disadvantaged but potentially bright students are grantees of the "Study Now Pay Later Plan" in consonance with the Educational Assistance Act of 1976. This opportunity enables these students to pursue higher education.

8. New instructional strategies and schemes which seek to achieve more effective delivery of mass primary education are being tried out in selected pilot divisions.

In addition to all these undertakings, the national government through the Ministry of Education and Culture with the assistance from international agencies like IBRD, UNESCO, UNICEF, WHO, etc., is spending an enormous amount of money to educational projects and programs as appertinently cutlined in the Ten-Year Education Development Plan (1978-1987). Its major thrust is to bring

about a well-balanced educational development both quantitative and qualitative. The qualitative improvement, would insure the achievement of regional and national goals as well as the maintenance of desirable educational standards. The quantitative expansion, on the other hand, would increase the outreach of educational services and facilities for the school children and likewise for out-of-school youths and adults.

The thrust of the plan for the next ten years will fall under the major areas: basic education, tertiary education, non-formal education and cultural development. Some of these programs/projects are as follows:

1. Provision and Distribution of Textbooks in 1:2 ratio.
   One set of textbook for every two students.

2. Development of a Learning Continuum which will emphasize the development of the curriculum on the three R's reading, writing, and arithmetic and cultural development subjects.

3. Establishment of Learning Resource Centers (LRC) conceived as an accessible source of instructional materials both the hardwares and softwares. These centers will serve as a multipurpose to the community - library, audiovisual room, non-traditional learning spaces, etc.

4. Developing Barangay High Schools into Community Centers.
   As a community center it will function both for the education and socio-economic development of the community. It will also serve as a training and marketing center.

5. Research/Study Program for the improvement of education in all levels both private and public.

6. Planning and Management Projects. These projects will be effective instruments for carrying out educational policies and reforms in order to maintain the proper functional linkages within the system in its relation to the rest of the society and provide the essential criteria for redirecting educational change.

   6.1 Formulation of Educational Development Plans

   6.2 Decentralized Educational Planning focused on the depressed, disadvantaged and underserved (DDU) schools

   6.3 Survey of the training needs of the Educational Planning Staff

   6.4 Preparation of the MEC Catalog of Curriculum Research and Development

6.5 Correspondence Course on Educational Planning and Management

6.6 Survey on Educational Institutions

6.7 Management Information System - Data Bank

7. Comparative Study of Philippine Languages. This project analyzes Philippine languages on the levels of sound, vocabulary and syntax. It aims to present similarities as well as differences of Philippine languages. The study will further enhance the implementation of bilingual policy in education.

8. Development of Philippine Educational Placement Test which will evaluate learning acquired in the formal or nonformal structure. This instrument will help the government and school authorities in retrieving school leavers into the formal educational system.

9. Democratization of Educational Opportunities through an expanded scholarship and study grant program to poor but deserving students, to the minority groups and to rebelreturnees from Mindanao.

10. Relignment of Education and Training to National Development Thrusts. To cope up with the agro-industrial demands of development, area of education and training to national development thrusts was manifested through the development of manpower needed for agriculture and industry, particularly those in the rural areas.

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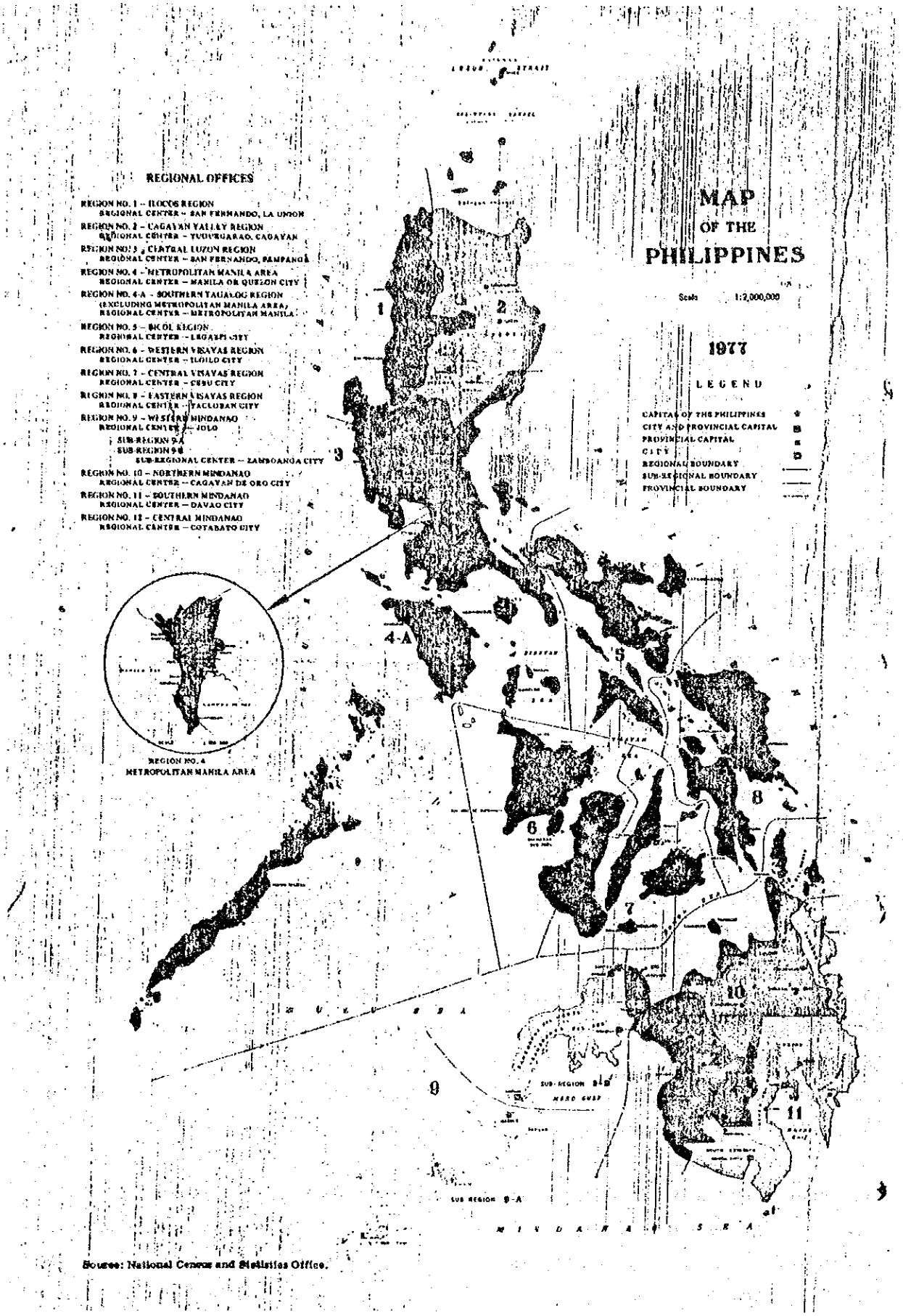

Source: National Census and Statistics Office.

10. 職業訓練学校一覧 (I)

LIST OF GOVERNMENT VOCATIONAL SCHOOLS

Region I	Name of School	Address	Enrolment (Secondary)
1.	Abra School of Arts and Trades	Bagued, Abra	795
2.	Asingan School of Arts and Trades	Asingan, Pangasinan	831
3.	Bacarri National Trade Agricultural H.S.	Paracelis, Mt. Province	
4.	Balakbak Agro-Industrial School	Kapangan, Benguet	
5.	Bangui School of Fisheries	Bangui, Ilocos Norte	
6.	Benguet School of Arts and Trades	Bakod, Benguet	395
7.	Buguias-Loo Agro-Industrial School	Buguias-Loo Benguet	540
8.	Burgos Agro-Industrial School	Burgos, Ilocos Norte	414
9.	Cervantes National School of Arts & Trades	Cervantes, Ilocos Sur	255
10.	Eastern Bontoo National Agricultural & Vocational High school	Berlig, Mt. Province	
11.	Eastern Pangasinan Agricultural College	Sta. Maria, Pangasinan	
12.	Ilocos Norte Agricultural College	Pasuquin, Ilocos Norte	200
13.	Ilocos Norte College of Arts & Trades	Laoag City	2413
14.	Ilocos Norte Regional School of Fisheries	La Pas, Laoag City	
15.	Ilocos Sue Experimental Station & Pilot School of Cottage Industries	Santiago, Ilocos Sur	423
16.	Marcos Agro-Industrial School	Marcos, Ilocos Norte	
17.	Narvacan School of Fisheries	Narvacan, Ilocos Sur	323
18.	Panggsinan School of Arts & Trades	Lingayen, Pangasinan	
19.	Pilar Rural School	Pilar, Abra	327
20.	Southern Ilocos Sur School of Fisheries	Candor, Ilocos Sur	122
21.	Speaker Eugenio Perex National Agricultural High School	San Carlos City, Pangasinan	413
22.	Tadian National School of Arts & Trades	Tadian, Mt. Province	540

23. Tublay School of Home Industries	Tublay, Benguet	1030
24. Ilocom Sur Agricultural College	Sta. Maria, Ilocos Sur	1064
25. Lagangilang Agricultural College	Lagangilang, Abta	
26. La Union School of Arts & Trades	San Fernando, La Union	1597
27. Pangasinan College of Fisheries	Binmaley, Pangasinan	

Region II

1. Abulog Rural and Vocational School	Abulog, Cagayan	
2. Abulog School of Fisheries	Abulog, Cageyan	
3. Alcala Rural Schl.	Alcala, Cagayan	615
4. Allacapan Vocational High School	Allacapan, Cagayan	545
5. Angadanan Vocational High School	Angadanan, Isabela	867
6. Aparri Institute of Technology	Aparri, Cagayan	749
7. Aparri School of Arts & Trades	Aparri, Cagayan	
8. Apayae National Agricultural High School	Calanasan Kalinga-Apayao	236
9. Baggao Agricultural High School	Baggao, Cagayan	
10. Balbalan Agro-Industrial School	Balbalan Kalinga-Apayao	
11. Batanes School of Arts and Trades	Basco, Batanes	295
12. Bibak National Agricultural School	Tabuk, Kalinge, Apayao	
13. Buking National Agricultural and Technical School	Appari, Cagayan	353
14. Cagayan Marine Fisheries Demonstration Station	Cagayan	
15. Cagayan Valley Agricultural College	Lallo, Cagayan	
16. Canayan Rural High School	Canayan, Isabela	1132
17. Claveria Rural and Vocational School	Claveria, Cagayan	
18. Claveria School of Arts & Trades	Claveria, Cagayan	
19. Enrile Vocational High School	Enrile, Cagayan	629
20. Gamu Rural School	Gamu, Isabela	587
21. Gattaran National Trade School	Gettaran, Cagayan	
22. Gonzaga National Agricultural and Vocational High School	Conzaga, Cagayan	
23. Ifugac National School of Arts & Trades	Lagawe, Ifugao	
24. Isabela School of Arts & Trades	Ilagan, Isabela	
25. Isabela School of Fisheries	Palanan, Isabela	187
26. Itawes National Agricultural & Technical School	Tuao, Cagayan	750
27. Jone Rural School	Jones, Isabela	844
28. Kalinga-Apayao School of Arts & Trades	Connor Kelinga-Apayao	545
29. Nueva Vizcaya School of Arts & Trades	Bambang, Nueva Vizmaya	1131

30. Pamplona National School of Fisheries	Pamplona, Cagayan	288
31. Pinukpuk Vocational School	Pinukpuk, Kalinga-Apayno	
32. Potia Agricultural High School	Potia, Yfugao	305
33. Quirino National Agricultural School,	Diffun, Quirino	621
34. Reina Mercedes Vocational And Industrial High School	Reina Mercedes, Isabela	585
35. Roxas Memorial Agricultural and Industrial School	Roxas, Isabela	
36. Sabtang National School of Fisheries	Sabtang, Batanes	
37. Sanchez Mira Rural and Vocational School	Sanchez Mira, Cagayan	
38. Sanchez Mira School of Arts & Trades	Sanchez Mira, Cagayan	378
39. San Mariano Jr. National Agricultural High School	San Mariano, Isabela	371
40. San Mateo Vocational and Industrial High School	San Mariano, Isabela	371
	(Santiago) Isabela	
	San Mateo, Isabela	708
41. Santiago Vocational and Industrial High School	Santiago, Isabela	1005
42. Solana Fresh Water and Fishery School	Solane, Cagayan	466
43. Tanudan Vocational High School	Tanudan, Kalinga-Apayao	112
44. Western Cagayan School of arts and Trades	Lasem, Cagayan	131
45. Western Cagayan Vocational High School	Lasam, Cagayan	721
46. Ifugao Agricultural & Technical College	Lamut, Ifugao	515
Region III		
1. Angeles City National Trade School	Angeles City	
2. Bataan National Agricultural School	Abucay, Bataan	794
3. Bataan National School For Filipino Craftmean	Orani, Bataan	793
4. Bataan School of Fisheries	Orion, Bataan	
5. Camiling School for Home Industries	Camiling, Tarlac	274
6. Candelaria School of Fisheries	Candelaria, Zambales	599
7. Floridablanca National Agricultural	Floridablanca, Pampanga	
8. Malolos Marine Fishery School and Laboratory	Malolos, Bulacan	
9. Marilao National Trade School	Marilao, Bulacan	372
10. Philippine National Agricultural School	Sta. Maria, Bulacan	696
11. Ramon Magsaysay Memorial School of Arts & Trades	Ica, Zambales	1257
12. San Jose del Monte National Trade School	San Jose Del Monte, Bulacan	317

13. San Rafael National Trade School	San Rafael, Bulacan	
14. San Vicante Pilot School for Philippine Craftsmen	Bacolor, Pumpanga	
15. Ste. Domingo National Trade School	Ste. Domingo, Nueva Ecija	413
16. Tarlac National Vocational High School	Paniqui, Tarlac	
17. Bataan National School of Arts & Trades	Balanga, Bataan	793
18. Bulacan National Agricultural School	San Ildefonse, Bulacan	1042
19. Sabani Estate Agricultural College	Gabalden, Nueve Ecija	

Region IV

1. Alcantara National Trade School	Alcantara, Romblon	
2. A maya School of Home Industries	Tansa, Cavite	
3. Aurora National Agricultural School	Aurora, Quezon	222
4. Batangas National High School	Batangas City	
5. Baybay National College of Agriculture and Technology	Siniloan, Laguna	1013
6. Bongabong School of Fisheries	Bongabong, Oriental Mindoro	744
7. Calapan School of Arts & Trades	Calapan, Oriental Mindoro	
8. Cavite College of Fisheries	Naic, Cavite	843
9. Coron School of Fisheries	Coron, Palawan	523
10. Jocobo Z. Gonzales Memorial School of Arts and Trades	Biffan, Laguns	
11. Jose P. Lanrel Sr. Memorial School of Arts and Trades	Melvar, Batangas	
12. Judge Guillermo Eleasar Memorial School of Fisheries	Tagkawayan, Quezon	437
13. Laguna School of Arts & Trades	Sta. Cruz, Laguna	
14. Looc, ationel School of Fisheries	Looc, Occidental Mindoro	134
15. Los Baffes School of Fisheries	Los Baffes, Laguna	1246
16. Lubang Vocationa High School	Lubang, Occidental Mindoro	
17. Marinduque School of Arts & Trades	Boac, Marindugue	
18. Mindoro College of Agriculture & Technology	Alcata, Victoria, Oriental Mindoro	713
19. Puerto Princesa School for Philippine Craftsmen	Puerte Princesa, Palawan	
20. Quezon National Agricultural School	Pagbilac, Quezon	281
21. Quezon National School of Arts & Trades	Mauban, Quezon	
22. Rizal National Agricultural School	Tanay, Rizal	448
23. Romblon Agricultural College	Odiongan, Romblon	1230
24. Romblon School of Fisheries	San Agustin, Romblon	365

25. Romblon Nationa Vocational School	San Fernando, Romblon	
26. San Jose National Agricultural and	San Jose, Occidental Mindoro	
27. Industrial School		
27. San Pablo City School of Arts & Trades	San Pablo, Laguna	
28. Tanauan School of Fisheries	Tanauan, Batangas	726
29. Tanza National Trade School	Tanza, Cavite	
30. Apolinario R. A pacible School of Fisheries	Nasugbu, Batangas	629
31. Cavite Colleges of Arts & Trades	Rosario, Cavite	
32. Lucban National College	Lucban, Quezon	1982
33. Palawan School of Arts & Trades	Cuyo, Palawan	
Region V		
1. Bulan Voclational High School	Bulan, Sereogon	2285
2. Calabanga National School of Arts & Trades	Calabanga, Camarines S.	828
3. Camarines Norte National Agricultural School	Labo, Camarines Norte	717
4. Camarines Norte School of Arts & Trades	Jose Panganiban, C.N.	475
5. Camarinos Sur Nationa (High School) College of Arts & Trades	Naga City	
6. Casiguran Vocational High School	Gasiguran, Sorsogon	676
7. Camarines Sur Agricultural College	Pili, Camarines Sur	1923
8. Catanduanes Agricultural & Industrial College	Payo, Catanduanes	676
9. Dr. Emilio B. Espinosa Sr. Memorial Agricultural College	Mandaon, Masbate	624
10. Densol Vocationa High School	Densol, Sorsogan	156
11. Gov. Mariano Fuantebella Memorial Fishery School	Goa, Camarines Sur	316
12. Magallanes National Vocational High School	Magallanes, Sorsogon	315
13. Magallanes school of Fisheries	Magallanes, Sorsogon	285
14. Masbate School of Fisheries	Masbate, Masbate	650
15. Mercedes School of Fisheries	Mercedes, Camarines Norte	396
16. Pasacao School of Fisheries	Pasacao, Camarines Sur	570
17. Ragay National Agricultural & Fishery School	Ragay, Camarines Sur	
18. School for Philippine Craftsmen	Polangui, Albay	615
19. Sipecot National School of Arts & Trades	Sipecot, Camarines Sur	589

20. Sorsogon National Agricultural School Formerly Castilla Agricultural H.S.	Castilla, Sorsogon	
21. Sorsogon College of Arts & Trades Formerly Sorsogon School of Arts & Trades	Sorsogon, Sersogen	1516
22. Tiwi-Agro-Industrial School	Tiwi, Albay	597
Region VI		
1. Antique College of Agriculture	Hamtic, Antique	425
2. Antique School of Arts & Trades	Sibalom, Antique	1481
3. Antique Vocational School	Bugasong, Antique	
4. Aklan Agricultural College	Banga, Aklan	
5. Aklan National College of Fisheries	New Washington, Aklan	974
6. Bacolod City National Trade School	Bacolod City	
7. Barotac Viejo National Agricultural College	Barota, Viejo, Ileilo	660
8. Batad National Agricultural and Vocational High School	Batad, Ileilo	237
9. Buenavista Vocational School	Buenavista, Ileilo	892
10. Buruanga Vocational School	Buruanga, Ileilo	574
11. Calinog Agricultural & Industrial School	Calinog, Ileilo	1010
12. Capis Regional Vocational High School	Dumalag, Capiz	1762
13. Concepcion School of Fisheries	Concepcion, Ileilo	779
14. Capiz Agricultural and Fishery School	Pontevedra, Capiz	1254
15. Capiz Institute of Technology	Roxas City	1252
16. Dingle Agricultural & Technical College	Dingle, Ileilo	788
17. Ibajay National Agricultural High School	Ibajay, Aklan	
18. Iloilo National College of Agriculture	Lambunae, Ileilo	444
19. Iloilo School of Arts and Trades	Iloilo City	990
20. Lambunae Institute of Soienos and Technology	Lambunao, Iloilo	1195
21. Leon National College of Agriculture	Leon, Iloilo	1124
22. Libartad National Vocational School	Libertad, Antique	563
23. Malinae School of Philippine Crafteman	Malinao, Aklan	531
24. Miagao Vocational School	Miagao, Iloilo	1607
25. Mambusao Agricultural & Technical College	Mambusao, Capiz	
26. Negres Ocoidental School of Arts & Trade	Talisay, Negros Oco.	1436
27. Negres Occidental National Agro-Industrial School For Home Industries	Hinigaran, N.O.	647

28. Negres Occidental School of Fisheries	Binalbagan, N.O.	1017
29. Northern Antique Vocational School	Culasi, Antique	
30. Numancia National School of Fisheries	Numancia, Aklan	
31. Negros Occidental Agricultural College	Kabankalan, N.O.	636
32. Passi Trade School	Passi, Iloilo	
33. Pototan Vocational School	Pototan, Iloilo	2191
34. Roxas City School for Phil. Craftsmen	Roxas City	
35. Roxas Memorial School of Arts & Trades	Kalibo, Aklan	1409
36. San Enrique National Agricultural and Vocational High School	San Enrique, Iloilo	
37. San Jacquin School of Fisheries	San Josquin, Iloilo	521
38. Talisay School of Fisheries	Talisay, N.O.	
39. Tario Lim Memorial School of Fisheries	Tibiao, Antique	610
40. Western Visayas College of Fisheries	Estancia, Iloilo	882

Region VII

1. Aballana National School	Cebu City	4343
2. Bais School of Fisheries	Bais, Negres Orr.	317
3. Bohol School of Arts & Trades	Tagbilaran City	1078
4. Bohol Agricultural College	Bilar, Bohol	924
5. Bohol School of Fisheries	Candijay, Bohol	592
6. Cebu South Agre Industrial School	Argao, Cebu	1712
7. Cebu School of Arts and Trades	Cebu City	629
8. Clarin School of Fisheries	Clarin, Bohol	580
9. Danao Vocational School	Danao City	1006
10. East Visayan School of Arts & Trades	Dumaguete City	873
11. Cuihulngan Vocational School	Guihulngan, Neg. Orr.	714
12. Larana National Vocational School	Larena Siquijor, N. Orr.	830
13. Magaaysay School of Fisheries	San Francisco, Cebu	404
14. Manuel Roxas Memorial School of Fisheries	Daanbentayan, Cebu	607
15. Moalboal School of Fisheries	Moalboal, Cebu	683
16. Negros Oriental National Agricultural School	Bayawan, N. Or	1040
17. Quirino School of Fisheries	Carmen, Cebu	799
18. Sudlon Agricultural School	Cebu City	597
19. Tuburan Vocational High School	Tuburan Cebu	1098

Region VIII

1. Alang-Alang Agre-Industrial School	Alang-Alang, Layte
2. Alugan School of Craftsmanship & Home Industries	San Policarpio, Eastern Semar

3. Biliran National Agricultural College	Biliran, Leyte	468
4. ARTECHE National Agricultural School	Arteche, Eastern Semar	
5. Balangiga Rural School	Balangiga, Eastern Samar	182
6. Balicuatro National Vocationa School	Allen, Northern Samar	983
7. Basey National Agricultural High School	Basey, Samar	
8. Basey National High School	Basey, Samar	
9. Bate School of Fisheries	Bate, Leyte	
10. Bobon School of Fisheries	Bobon, Northern Samar	486
11. Bobon School for Philippine Craftsmen	Bobon, Southern Leyte	
12. Bontec National Agricultural & Fishery School	Bontec, Southern Leyte	
13. Cabucgayan National School of Arts and Trades	Biliran, Leyte	416
14. Can-Avid-Agre-Industrial School	Can-Avid, Eastern Samar	
15. Capul-Agre-Industrial High School	Capul, Northern Samar	555
16. Carigra School of Fisheries	Carigara, Leyte	
17. Clarencio Calagos Memorial School of Fisheries	Sta. Margarita, Samar	344
18. Daniel Romualdes Memorial School of Fisheries	Tolosa, Layte	382
19. Daram Fishery and Marine Experimentation and Demonstration Station	Daram, Samar	
20. Don Vicante Orestes Romualdes Agricultural College	Burauen, Leyte	64
21. Eastern Samar Regional Agricultural School	Borongan, Eastern Samar	551
22. Cala Vocational School	Camay, Northern Samar	526
23. Giporlos National Trade School	Giporlos, Eastern Samar	
24. Hilongos National Vocational School	Hilongos, Leyte	
25. Hinunangan Agricultural and Vocational School	Hinunangan, Southern Leyte	494
26. Isabel National rural High School	Isabel Leyte	551
27. Lacang National Trades School	Lacang, Northern Samar	1184
28. Lanuaan School of Graftsmanship and Home Industries	Lanuan Eastern, Samar	
29. Leyte Agro-Industrial School	Leyte, Leyte	266
30. Leyte National Agricultural College	Villaba, Leyte	
31. MacArthur National Agricultural School	Gen. MacArthur eastern Samar	
32. Matarinao School of Fisheries	Salcedo, Eastern Samar	

33. Maripipi National Vocational School	Maripipi, Leyte	
34. Maydolong National Agricultural School	Maydolong, Eastern Samar	399
35. Merida Vocational School	Merida, Leyte	
36. Haval School of Fisheries	Naval, Leyte	
37. Pintuyan Vocational High School	Pintuyan, Southern Leyte	250
38. San Antonio Rural High School	San Antonio, Northern Samar	
39. Sam Isidro Agro-Industrial High School	San Isidro, Northern Samar	
40. Samar National Agricultural School	Sandara, Samar	182
41. Pedro Rebadulla National Agricultural School	Catubig, Northern Samar	545
42. Samar School of Arts and Trades	Catbalogan, Samar	
43. Southern Samar Agricultural College	Saloedo, Eastern Samar	
44. Samar National Pilot Opportunity School	San Policarpio, Eastern Samar	
45. Samar National School of Arts & Trades	Taft, Eastern Samar	
46. Samar Regional School of Fisheries	Catbalogan, Samar	441
47. Sogod National Trade School	Sogod, Southern Leyte	
48. Southern Samar School of Arts & Trades	Guiaan, Eastern Samar	1270
49. Sumoroy Agrc-Industrial School	Palapag, Northern Samar	
50. Tabango Vocational High School	Tabango, Leyte	381
51. Tiburcio Tancinco Memorial Vocational School	Calbayog City	
52. Tanauan School of Craftsmanship & Home Industries	Tanauan, Leyte	1058
53. Tinambacan National School of Fisheries	Calbayog City	
54. Wright Vocational School	Wright, Samar	

Region IX

1. Basilan Agro-Industrial School	Bamitan, Basilan	864
2. Dipolog School of Fisheries	Dipolog City	442
3. Hadji Butu School of Arts & Trades	Jolo, Bulu	1532
4. Jolo Agricultural School	Jolo, Sulu	192
5. Kabasalan National Vocational School	Kabasalan, Zambeanga del Norte	1061
6. Katipunan National Agricultural School	Katipunan, Zamboanga del Norte	
7. Lapak Agricultural School	Siasi, Sulu	
8. Lapak National School of Fisheries	Siasi, Sulu	247
9. Mindanao Regional School of Fisheries	Zamboanga City	916
10. Risazl Memorial National Vocational School	Rapitan City	
11. Siasi School of Fisheries	Siasi, Sulu	305
12. Sindanagan National Agricultural School	Sindanagan, Zamboanga del Norte	

13. Sicoon National Vocational School	Sicoon, Zamboanga del Norte	685
14. Sulu National Regional Agricultural Sch.	Bongao, Tawi-Tawi	
15. Sulu Pilot Opportunity School of Fisheries	Bongao-Tawi-Tawi	
16. Tawi-Tawi School of Arts and Trades	Bongao, Tawi-Tawi	
17. Zambeanga del Norte School of Arts and Trades	Diplog City	
18. Zamboanga del Sur National Agricultural School	Domingag, Zamboanga del Sur	360
19. Zamboanga del Norte Agricultural College	Liloy, Zamboanga del Norte	802
20. Zamboanga School of Arts and Trades	Zamboanga City	544

Region X

1. Agusan del Sur School of Arts & Trades	Prosperidad, Agusan del Sur	
2. Baliangao School of Fisheries	Baliangao, Misamis Occ.	
3. Bukidnon National School of Home Industries	Maramag, Bukidnon	
4. Camiguin School of Arts & Trades	Catarman, Camiguin	
5. Clavaria National Rural High School	Clavaria, Misamis Orr.	385
6. Dinagat School of Fisheries	Dinagat, Surigao del Norte	
7. Gigaquit National School of Home Industries	Gigaquit, Surigao del Norte	504
8. Kinoguitan National Agricultural High School	Kinoguitan, Misemis Orr.	
9. Mainit National (High School) Agricultural H.S.	Mainit, Surigao del Norte	
10. Malimono School of Fisheries	Malimono, Surigao del Norte	
11. Nasipit National Vocational School	Nasipit, Agusan del Norte	11
12. Northern Mindanao School of Arts & Trades	Cabadbaran, Agusan del Norte	
13. Northern Mindanao School of Fisheries	Bunavista, Agusan del Norte	963
14. Numancia National Vocational School	Del Carmen, Surigao del Norte	578
15. Oroquieta Agro-Industrial School	Oroquista City	167
16. Ozamis City School of Arts & Trades	Ozamis City	519
17. Southern Agusan National Agricultural College	Bunawan, Agusan del Sur	
18. Tangub Agrc-Industrial School	Tangub City	295
19. Surigao del Norte School of Arts & Trades	Surigao City	1200

Region XI

1. Cantilan National Trade School	Cantilan, Sarigao del Sur	928
2. Cateel National Agricultural School	Cateel, Davao Oriental	
3. Cateel Vocational High School	Cateel, Davao Oriental	
4. Davao del Norte School of Fisheries	Panabo, Davao del Norte	328
5. Davao del Sur School of Fisheries	Malalag, Davao del Sur	
6. Davao National Agricultural School	Monkayo, Davao del Norte	640
7. General Sentes National Trade School	General Santes City	554
8. Glan Vocational High School	Glan, South Cotobato	
9. Lianga National School of Fisheries	Lianga, Suriguo del Sur	
10. Lupon Vocational High School	Lupon, Davao Oriental	469
11. Mati School of Arts & Trades	Mati, Davao Oriental	522
12. Surallah National Agricultural School	Surallah, South Cotobato	
13. Surigao National Agricultural School	San Miguel, Surigao del Sur	
14. Tagum National Trade School	Tagum, Davao del Norte	722

Region XII

1. Balabagan Trade School	Balabagan, Lanao del Sur	244
2. Iligan City School of Fisheries	Iligan City	393
3. Kidapawan National High School	Kidapawan, North Cotobato	993
4. Kidapawan Trade School	Kidapawan, North Cotobato	861
5. Lanso National College of Arts & Trades	Marawi City	702
6. Lanao Agricultural College	Lumbetan, Lanao del Sur	37
7. Lenao del Norte Agricultural College	Karomatan, Lanao del Norte	361
8. Maigo School of Arts & Trades	Maigo, Lanao del Norte	888
9. Salvador Trade School	Salvador, Lanao del Norte	
10. Upi Agricultural School	Upi, Maguindanso	385

(II)

LIST OF PUBLIC VOCATIONAL SCHOOLS OFFERING SECONDARY, TECHNICAL/TECHNICIAN AND FOUR-YEAR DEGREE COURSES BY REGION

	1981 budget in thousand ₱
National Capital Region	
Agriculture: None	
Trade:	
1. *Marikina Institute of Science and Technology, Marikina, Metro Manila	4,120
2. Marikina School of Arts and Trades Texlite Training Program, Marikina	446
3. Rizal Experimental Station and Pilot School of Cottage, Pasig, Metro Manila	2,223
Fishery: None	
Region I	
Agriculture:	
1. *Ilocos Sur Agricultural College, Sta. Maria, Ilocos Sur	1,853
2. *Lagangilang Agricultural College, Lagangilang, Abra	1,960
3. Burgos Agro-Industrial School, Burgos, Ilocos Norte	475
4. Eastern Pangasinan Agricultural College, Sta. Maria, Pangasinan	853
5. Ilocos Norte Agricultural College, Pasuquin, Ilocos Norte	1,553
6. Marcos Agro-Industrial School, Marcos, Ilocos Norte	653
7. Pilar Rural School, Pilar, Abra	805
8. Speaker Eugenio Perez National Agricultural High School, San Carlos City (Pangasinan)	1,143
9. Eastern Bontoc Agricultural & Vocational School, Barlig, Mt. Province	553
Trade:	
1. Abra School of Arts and Trades, Bangued, Abra	1,284

	1981 budget in thousand ₱
2. *La Union School of Arts and Trades San Fernando, La Union	2,908
3. Benguet National School of Arts & Trades Bokod, Benguet	1,035
4. Balakbak Agro-Industrial School Kapangan, Benguet	1,175
5. Buguias Loo Agro-Industrial School Buguias Loo, Benguet	999
6. Tadian National School of Arts & Trades Tadian, Mt. Province	1,040
7. Tublay School of Home Industries Tublay, Benguet	1,290
8. Bacarri National Trade Agricultural High School Bacarri, Mt. Province	834
9. Cervantes National School of Arts & Trades Cervantes, Ilocos Sur	620
10. Ilocos Norte College of Arts & Trades Laoag City	2,605
11. Ilocos Sur Experimental Station & Pilot School of Cottage Industries Santiago, Ilocos Sur	783
12. Asingan School of Arts and Trades Asingan, Pangasinan	865
13. Pangasinan School of Arts and Trades Lingayen, Pangasinan	1,027
Fishery:	
1. Narvacan School of Fisheries Narvacan, Ilocos Sur	973
2. Pangasinan College of Fisheries Binualey, Pangasinan	722
3. Bangui School of Fisheries Bangui, Ilocos Norte	579
4. Bolinao School of Fisheries Bolinao, Pangasinan	574
5. Ilocos Norte Regional School of Fisheries La Paz, Laoag City	545
6. Southern Ilocos Sur School of Fisheries Gandon, Ilocos Sur	420

	1981 budget in thousand ₱
Region II	
Agriculture:	
1. Ifugao Agricultural/Technical College Lamut, Ifugao	1,458
2. Abulog Rural Vocational School Abulog, Cagayan	773
3. Bibak National Agricultural School Tabuk, Kalinga-Apayao	883
4. Cauayan Rural School Cauayan, Isabel	1,501
5. Gamu Rural School Gamu, Isabela	812
6. Quirino National Agricultural School Diffun, Quirino	996
7. Stawai National Agricultural & Technical School Tuao, Cagayan	1,040
8. Alcala Rural School Alcala, Cagayan	879
9. Apayao National Agricultural High School Calanasan, Kalinga-Apayao	715
10. Baggao Agricultural High School Baggao, Cagayan	824
11. Balbalan Agro-Industrial School Balbalan, Kalinga-Apayao	752
12. Claveria Rural Vocational School Claveria, Cagayan	549
13. Potia Agricultural High School Potia, Ifugao	812
14. San Mariano Jr. National Agricultural School San Mariano, Isabela	736
15. Bukig National Agricultural & Technical School Bukig, Aparri, Cagayan	888
16. Cagayan Valley Agricultural College Lallo, Cagayan	1,438
17. Gonzaga National Agricultural & Technical School Gonzaga, Cagayan	1,020
18. Sanchez Mira Rural & Vocational School Sanchez Mira, Cagayan	747

	1981 budget in thousand ₱
19. Western Cagayan Vocational High School Lasam, Cagayan	573
20. Jones Rural School Jones, Isabela	1,075
21. Roxas Memorial Agricultural & Industrial School Roxas, Isabela	1,150
Trade:	
1. Nueva Vizcaya School of Arts & Trades Bambang, Nueva Vizcaya	1,440
2. Angadanan Vocational High School Angadanan, Isabela	934
3. Kalinga-Apayao School of Arts & Trades Kalinga-Apayao	745
4. Enrile Vocational High School Enrile, Cagayan	1,121
5. Pinukpok Vocational High School Pinukpok, Kalinga-Apayao	738
6. Reina Mercedes Vocational & Industrial High School Reina Mercedes, Isabela	900
7. Sanchez Mira School of Arts & Trades Sanchez Mira, Cagayan	745
8. San Mateo Vocational & Industrial High School San Mateo, Isabela	894
9. Western Cagayan School of Arts and Trades Lasam, Cagayan	1,035
10. Claveria School of Arts and Trades Claveria, Cagayan	831
11. Batanes School of Arts and Trades Basco, Batanes	809
12. Ifugao School of Arts and Trades Lagawe, Ifugao	792
13. Santiago Vocational & Industrial School Santiago, Isabela	996
14. Tanudan Vocational High School Tanudan, Kalinga-Apayao	651
15. Allacapan Vocational High School Allacapan, Cagayan	739

	1981 budget in thousand ₱
16. Gattaran National Trade School Gattaran, Cagayan	500
17. Aparri School of Arts and Trades Aparri, Cagayan	1,213
18. Isabela School of Arts & Trades Ilagan, Isabela	1,424
Fishery:	
1. Cagayan Marine Fisheries Demonstration Station, Cagayan	20
2. Aparri Institute of Technology Aparri, Cagayan	1,417
3. Solana Fresh Water Fishery School Solana, Cagayan	903
4. Pamplona National School of Fisheries Pamplona, Cagayan	575
5. Abulog School of Fisheries Abulog, Cagayan	542
6. Isabela School of Fisheries Palanan, Isabela	678
7. Sabtang National School of Fisheries Sabtang, Batanes	613
Region III	
Agriculture:	
1. *Bulacan National Agricultural School San Ildefonso, Bulacan	1,801
2. *Western Luzon Junior Agricultural College San Marcelino, Zambales	1,609
3. Sabani Estate Agricultural College Gabaldon, Nueva Ecija	1,540
4. Phil. National Agricultural School Sta. Maria, Bulacan	1,087
5. Bataan National Agricultural School Abucay, Bataan	921
6. Floridablanca National Agricultural School Floridablanca, Pampanga	827
Trade:	
1. *Bataan National School of Arts and Trades Balanga, Bataan	2,114

	1981 budget in thousand ₱
2. Ramon Magsaysay Memorial School of Arts and Trades Iba, Zambales	1,659
3. Angeles City National Trade School Angeles City	1,215
4. Bataan National School of Filipino Craftsmen Orani, Bataan	997
5. Marilao National Trade School Marilao, Bulacan	1,074
6. San Jose del Monte National Trade School San Jose del Monte, Bulacan	560
7. San Vicente Pilot School for Filipino Craftsmen Bacolor, Pampanga	527
8. Sto. Domingo National Trade School Sto. Domingo, Nueva Ecija	711
9. Tarlac National Vocational School Paniqui, Tarlac	520
10. San Rafael National Trade School San Rafael, Bulacan	20
11. Camiling Nat. School for Eilipino Craftsmen Camiling, Tarlac	632
Fishery:	
1. Bataan School of Fisheries Orion, Bataan	809
2. Candelaria School of Fisheries Candelaria, Zambales	947
3. Malolos Marine Fishery School and Laboratory Malolos, Bulacan	836
Region IV	
Agriculture:	
1. Mindoro National College Agricultural & Technological School Alcate, Victoria, Oriental Mindoro	1,196
2. Baybay National College of Agriculture & Technology Siniloan, Laguna	1,363
3. Romblon Agricultural College Odiongan, Romblon	1,162
4. Quezon National Agricultural School Pagbilao, Quezon	834

	1981 budget in thousand ₱
5. Rizal National Agricultural School Tanay, Rizal	825
6. San Jose National Agricultural & Industrial School San Jose, Occidental Mindoro	747
7. Aurora National Agricultural School Aurora, Quezon	586
Trade:	
1. *Palawan School of Arts and Trades Cuyo, Palawan	1,957
2. Cavite College of Arts and Trades Rosario, Cavite	1,151
3. San Pablo City School of Arts & Trades San Pablo City	1,211
4. Marinduque School of Arts and Trades Boac, Marinduque	1,207
5. Calapan School of Arts and Trades Calapan, Oriental	949
6. Laguna School of Arts and Trades Sta. Cruz, Laguna	1,076
7. Jacobo Z. Gonzales Mem. School of Arts & Trades Biñan, Laguna	985
8. Jose P. Laurel Sr. Mem. School of Arts and Trades Malvar, Batangas	729
9. Quezon National School of Arts and Trades Mauban, Quezon	728
10. Romblon National Vocational School San Fernando, Romblon	846
11. Alcantara National Trade School Alcantara, Romblon	662
12. Amaya School of Home Industries Tanza, Cavite	777
13. Lubang Vocational High School Lubanga, Occidental Mindoro	523
14. Puerto Princesa School for Filipino Craftsmen Puerto Princesa City	728
15. Tanza National Trade School Tanza, Cavite	587

	1981 budget in thousand ₱
Fishery:	
1. *Apolinario R. Apacible School of Fisheries	
Nasugbu, Batangas	1,834
2. Cavite College of Fisheries	
Naic, Cavite	963
3. Coron School of Fishery	
Coron, Palawan	716
4. Bongabong School of Fisheries	
Bongabong, Oriental Mindoro	775
5. Looc National School of Fisheries	
Looc, Occidental Mindoro	505
6. Los Baños School of Fisheries	
Los Baños, Laguna	1,204
7. Romblon School of Fisheries	
San Agustin, Romblon	654
8. Tagkawayan School of Fisheries - (Judge Guillermo Eleazar Memorial School of Fisheries)	
Tagkawayan, Quezon	671
9. Tanauan School of Fisheries	
Tanauan, Batangas	775
Region V	
Agriculture:	
1. *Camarines Sur Agricultural College	
Pili, Camarines Sur	2,832
2. Catanduanes Agricultural & Industrial College	
Panganiban, Catanduanes	1,456
3. Dr. Emilio Espinosa Sr. Mem. Agricultural College	
Mandaon, Masbate	1,550
4. Camarines Norte National Agricultural School	
Labo, Camarines Norte	933
5. Ragay National Agricultural and Fishery School	
Ragay, Camarines Sur	888
6. Sorsogon National Agricultural School	
Castilla, Sorsogon	636
7. Donsol Vocational High School	
Donsol, Sorsogon	462
8. Tiwi Agro-Industrial School	
Tiwi, Albay	803

	1981 budget in thousand ₱
Trade:	
1. *Camarines Sur National College of Arts and Trades Naga City	2,379
2. School for Philippine Craftsmen Polangui, Albay	1,187
3. Sorsogon School of Arts and Trades Sorsogon, Sorsogon	1,664
4. Calabanga National School of Arts and Trades Calabanga, Camarines Sur	1,036
5. Sipocot National School of Arts and Trades Sipocot, Camarines	845
6. Bulan Vocational High School Bulan, Sorsogon	1,307
7. Camarines Norte School of Arts & Trades Jose Panganiban, Camarines Norte	705
8. Casiguran Vocational High School Casiguran, Sorsogon	727
9. Magallanes National Vocational High School Magallanes, Sorsogon	513
Fishery:	
1. Masbate School of Fisheries Milagros, Masbate	956
2. Pasacao School of Fisheries Pasacao, Camarines Sur	861 861
3. Gov. Mariano Fuentabella Mem. Fishery School Bato, Sangay, Camarines Sur	454
4. Magallanes School of Fisheries Magallanes, Sorsogon	676
5. Mercedes School of Fisheries Mercedes, Camarines Norte	712
Region VI	
Agriculture:	
1. *Aklan Agricultural College Banga, Aklan	2,189
2. *Iloilo National College of Agriculture Lambunao, Iloilo	2,032
3. *Mambusao National Agricultural & Technical College Mambusao, Capiz	2,200

	1981 budget in thousand ₱
4. *Capiz Agricultural and Fishery School Pontevedra, Capiz	1,543
5. *Negros Occidental Agricultural College Kabankalan, Negros Occidental	1,616
6. Antique National College of Agricultural School Hamtic, Antique	1,055
7. Barotac Viejo National Agricultural College Barotac Viejo, Iloilo	1,061
8. Calinog Agricultural and Industrial School Calinog, Iloilo	1,401
9. Dingle National Agricultural and Technical College Dingle, Iloilo	1,210
10. Ibajay National Agricultural-Industrial School Ibajay, Aklan	850
11. Leon Nationa College of Agriculture Leon, Iloilo	1,296
12. Batad National Agricultural & Vocational High School Batad, Iloilo	585
13. San Enrique National Agricultural & Vocational High School San Enrique, Iloilo	596
Trade:	
1. *Capiz Institute of Technology Roxas City	2,700
2. *Iloilo School of Arts & Trades Iloilo City	3,390
3. Negros Occidental College of Arts & Trades Talisay, Negros Occidental	1,975
4. Antique School of Arts & Trades Sibalom, Antique	1,642
5. Antique Vocational School Bugasong, Antique	1,016
6. Bacolod City National Trade School Bacolod City	895
7. Buenavista Vocational School Buenavista, Guimaras	895
8. Buruanga Vocational School Buruanga, Aklan	744

	1981 budget in thousand ₱
9. Capiz Regional Vocational High School Dumalag, Capiz	1,287
10. Libertad National Vocational School Libertad, Antique	735
11. Lambunao Institute of Science & Technology Lambunao, Iloilo	1,309
12. Miagao Vocational School Miagao, Iloilo	1,373
13. Northern Antique Vocational School Culasi, Antique	875
14. Pototan Vocational School Pototan, Iloilo	1,379
15. Roxas City School for Phil. Craftsmen Roxas City	944
16. Roxas Memorial School of Arts & Trades Kalibo, Aklan	1,534
17. Malinao School for Phil. Craftsmen Malinao, Aklan	800
18. Negros Occidental Agro-Industrial School for Home Industries Hinigaran, Negros Occidental	900
19. Passi Trade School Passi, Iloilo	952
Fishery:	
1. *Aklan National College of Fisheries New Washington, Aklan	1,626
2. Tario Lim Memorial School of Fisheries (Now: Antique School of Fisheries) Tibiao, Antique	1,176
3. Concepcion School of Fisheries Concepcion, Iloilo	1,041
4. Negros Occidental School of Fisheries Binalbagan, Negros Occidental	1,075
5. Talisay School of Fisheries Talisay, Negros Occidental	692
6. Western Visayas College of Fisheries Estancia, Iloilo	989
7. Numancia National School of Fisheries Numancia, Aklan	494

	1981 budget in thousand ₱
8. San Joaquin School of Fisheries	
San Joaquin, Iloilo	629
Region VII	
Agriculture:	
1. Bohol Agricultural College	
Bilac, Bohol	1,531
2. Sudlon Agricultural School	
Cebu City	1,112
3. Cebu South Agro-Industrial School	
Argao, Cebu	1,255
4. Negros Oriental National Agricultural School	
Bayawan, Negros Oriental	1,044
Trade:	
1. Bohol School of Arts and Trades	
Tagbilaran City	1,816
2. *Cebu School of Arts and Trades	
Cebu City	3,291
3. *East Visayas School of Arts & Trades	
Dumaguete City	2,349
4. Abellana National Vocational School	
Cebu City	2,924
5. Danao Vocational School	
Danao City	933
6. Guihulñgan Vocational School	
Guihulñgan, Negros Oriental	957
7. Tuburan Vocational High School	
Tuburan, Cebu	1,037
8. Larena National Vocational School	
Larena, Negros Oriental	1,076
Fishery:	
1. Bohol School of Fisheries	
Candijay, Bohol	1,173
2. Clarin School of Fisheries	
Clarin, Bohol	794
3. Magsaysay School of Fisheries	
San Fernando, Cebu	612
4. Manuel Roxas Memorial School of Fisheries	
Daanbantayan, Cebu	950

	1981 budget in thousand ₱
5. Moalboal School of Fisheries Moalboal, Cebu	1,023
6. Quirino School of Fisheries Carmen, Cebu	870
7. Bais School of Fisheries Bais, Negros Oriental	459
Region VIII	
Agriculture:	
1. *Southern Samar Agricultural College Salcedo, Eastern Samar	1,866
2. Eastern Samar College of Agriculture Borongan, Eastern Samar	919
3. Can-avid Jr. Agricultural College Can-avid, Eastern Samar	831
4. Leyte National Agricultural College Villaba, Leyte	869
5. Alang-Alang Agricultural & Industrial School Alang-Alang, Leyte	1,090
6. Biliran National Agricultural College iliran, Leyte	1 1,504
7. Pedro Rebadulla Mem. National Agricultural School Catubig, Northern Samar	923
8. Arteche National Agricultural School Arteche, Eastern Samar	868
9. Balangiga Rural School Balangiga, Eastern Samar	755
10. Bontoc Agricultural And Fishery School Bontoc, Southern Leyte	945
11. Leyte Agro-Industrial School Leyte, Leyte	703
12. Maydolong National Agricultural School Maydolong, Eastern Samar	843
13. McArthur National Agricultural School Gen. McArthur, Eastern Samar	679
14. Samar National Agricultural School Gandara, Samar	878
15. Sumoroy Agro-Industrial School Palapag, Northern Samar	887

	1981 budget in thousand ₱
16. Basey National Agricultural High School Basey, Samar	518
17. Capul Agro-Industrial School Capul, Northern Samar	639
18. Don Vicente Orestes Romualdez Agricultural College Leyte	536
19. Hinunangan Agricultural and Vocational School Hinunangan, Leyte	765
20. Isabel National Rural High School Isabel, Leyte	740
21. San Antonio Rural High School San Antonio, Northern Samar	497
22. San Isidro Agro-Industrial High School San Isidro, Northern Samar	549
23. Samar National Pilot Opportunity School of Agriculture San Policarpio, Eastern Samar	588
Trade:	
1. *Samar School of Arts & Trades Catbalogan, Samar	2,587
2. Southern Samar School of Arts & Trades Guiuan, Eastern, Samar	1,472
3. Laoang National Trade School Laoang, Northern Samar	1,288
4. Tiburcio Tancinco Memorial Vocational School Calbayog City	1,362
5. Balicuatro National Vocational School Allen, Northern Samar	893
6. Gala Vocational School Gamay, Northern Samar	935
7. Giporlos Trade School Giporlos, Eastern Samar	948
8. Hilongos National Vocational High School Hilongos, Leyte	957
9. Maripipi National Vocational School Maripipi, Leyte	744
10. Sogod National Trade School Sogod, Southern Leyte	1,331

	1981 budget in thousand ₱
11. Alugan School of Craftsmanship & Home Industries San Policarpio, Eastern Samar	719
12. Bobon School for Philippine Craftsmen Bobon, Northern Samar	474
13. Merida Vocational School Merida, Leyte	834
14. Cabugcayen National School of Arts & Trades Biliran, Leyte	759
15. Lawaan School of Craftsmanship and Home Industries Lawaan, Eastern Samar	649
16. Pintuyan Vocational High School Pintuyan, Southern Leyte	554
17. Samar National School of Arts and Trades Catbalogan, Samar	584
18. Tabango Vocational High School Tabango, Leyte	858
19. Tanauan School of Craftsmanship & Home Industries Tanauan, Leyte	980
20. Wright Vocational School Wright, Samar	661
Fishery:	
1. Daniel Z. Romualdez Mem. School of Fisheries	793
2. Carigara School of Fisheries Carigara, Leyte	835
3. Bobon School of Fisheries Bobon, Northern Samar	657
4. Daram Fishery and Marine Experimentation & Demonstration Station Daram, Samar	34
5. Bato School of Fisheries Bato, Leyte	893
6. Samar Regional School of Fisheries Catbalogan, Samar	957
7. Clarencio Calagos Mem. School of Fisheries Sta. Margarita, Samar	473
8. Naval School of Fisheries Naval, Leyte	564

	1981 budget in thousand ₱
9. Tinambacan National School of Fisheries Calbayog City	529
10. Matarinao School of Fisheries Salcedo, Eastern Samar	673
Region IX	
Agriculture:	
1. *Zamboanga del Norte Agricultural College Liloy, Zamboanga del Norte	1,556
2. Katipunan National Agricultural School Katipunan, Zamboanga del Norte	1,140
3. Lapak Agricultural School Siasi, Sulu	970
4. Sindangan National Agricultural School Sindangan, Zamboanga del Norte	1,155
5. Tawi-Tawi National Regional Agricultural School Bongao, Tawi-Tawi	845
6. Zamboanga del Sur National Agricultural School Dumingag, Zamboanga del Sur	1,045
7. Basilan National Agro-Industrial School Basilan	702
8. Jolo Agricultural High School Jolo, Sulu	695
Trade:	
1. Hadji Butu School of Arts and Trades Jolo, Sulu	1,250
2. *Zamboanga School of Arts and Trades Zamboanga City	2.470
3. Kabasalan National Vocational School Kabasalan, Zamboanga del Sur	1,280
4. Rizal Memorial National Vocational School Dapitan City	1,150
5. Siocon National Vocational School Siocon, Zamboanga del Norte	875
6. Zamboanga del Norte School of Arts and Trades Dipolog City	1,195
7. Tawi-Tawi School of Arts and Trades Tawi-Tawi	314

	1981 budget in thousand ₱
Fishery:	
1. Mindanao Regional School of Fisheries	
Zamboanga City	1,966
2. Dipolog School of Fisheries	
Dipolog City	1,215
3. Lapak National School of Fisheries	
Lapak, Sulu	809
4. Siasi School of Fisheries	
Jolo, Sulu	612
5. Tawi-Tawi Pilot Opportunity	
Bongao, Tawi-Tawi	643
Region X	
Agriculture:	
1. Claveria National Rural High School	1,020
2. Claveria, Misamis Oriental	1,020
2. Northern Mindanao National Agricultural College	
Ampayon, Butuan City	1,200
3. Oroquieta Agro-Industrial School	
Oroquieta City	780
4. Southern Agusan National Agricultural College	
Bunawan, Agusan del Sur	960
5. Tangub Agro-Industrial School	
Tangub City	840
6. Kinoguitan National Agricultural High School	
Kinoguitan, Misamis Occidental	680
7. Mainit National Agricultural School	
Mainit, Surigao del Norte	1,285
Trade:	
1. *Surigao del Norte School of Arts and Trades	
(Formerly National High School)	
Surigao City	2,293
2. Camiguin School of Arts & Trades	
Mambayao, Camiguin	370
3. Agusan School of Arts & Trades	
Prosperidad, Agusan del Sur	720
4. Northern Mindanao School of Arts & Trades	
Cabadbaran, Agusan del Norte	1,080

	1981 budget in thousand ₱
5. Ozamiz City School of Arts & Trades	
Ozamiz City	790
6. Bukidnon National School of Home Industries	
Maramag, Bukidnon	810
7. Gigaquit National School of Home Industries	
Gigaquit, Surigao del Norte	860
8. Nasipit National Vocational High School	
Nasipit, Agusan del Norte	560
9. Numancia National Vocational High School	
Del Carmen, Surigao del Norte	720
Fishery:	
1. Northern Mindanao School of Fisheries	
Buenavista, Agusan del Norte	1,130
2. Baliangao School of Fisheries	
Baliangao, Misamis Occidental	930
3. Dinagat School of Fisheries	
Dinagat, Surigao del Norte	600
4. Malimono School of Fisheries	
Malimono, Surigao del Norte	700
Region XI	
Agriculture:	
1. Surigao National Agricultural School	
San Miguel, Surigao del Sur	745
2. Davao National Agricultural School	
Monkayo, Davao del Norte	767
3. Cateel National Agricultural High School	
Cateel, Davao Oriental	439
4. Surallah National Agricultural School	
Surallah, South Cotabato	1,075
Trade:	
1. Glan Vocational High School	
Glan, South Cotabato	1,286
2. Cantilan National Trade School	
Cantilan, Surigao del Sur	936
3. Tagum National Trade School	
Tagum, Davao del Norte	1,062
4. Cateel Vocational High School	
Cateel, Davao Oriental	428

	1981 budget in thousand ₱
5. Gen. Santos National Trade School	
General Santos City	756
6. Lupon Vocational School	
Lupon, Davao Oriental	442
7. Mati School of Arts and Trades	
Mati, Davao Oriental	609
Fishery:	
1. Lianga National School of Fisheries	
Lianga, Surigao del Sur	1,217
2. Davao del Sur School of Fisheries	
Davao del Sur	694
3. Davao del Norte School of Fisheries	
Davao del Norte	542
Region XII	
Agriculture:	
1. Lanao Agricultural College	
Lumbatan, Lanao del Sur	1,661
2. Lanao del Norte Agricultural College	
Caromatan, Lanao del Norte	1,566
3. Upi Agricultural School	
Upi, Maguindanao	1,215
Trade:	
1. Lanao National College of Arts & Trades	
Marawi City	1,381
2. Kidapawan Trade School	
Kidapawan, North Cotabato	1,455
3. Balabagan Trade School	
Balabagan, Lanao del Sur	716
4. Salvador Trade School	
Baroy, Lanao del Norte	685
5. Maigo School of Arts & Trades	
Maigo, Lanao del Norte	1,406
Fishery:	
1. Iligan City National School of Fisheries	
Iligan City	955