



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

CHED MEMORANDUM ORDER

No. 34

Series of 2001

SUBJECT : POLICIES, STANDARDS AND GUIDELINES  
FOR ENGINEERING EDUCATION

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In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the "Higher Education Act of 1994," and by virtue of Resolution No. 198-2001 of the Commission en banc dated Oct. 15, 2001, and upon the recommendation of the Technical Panel for Engineering, Technology and Architecture, for the purpose of rationalizing Engineering Education in the country and in view of keeping its programs at pace to the goals and mission of the Commission and the nation and to make engineering education responsive to the growing demands for manpower in the business and industrial world, the following policies, standards and guidelines are hereby adopted and promulgated by the Commission, thus:

#### I - AUTHORIZATION

1. Authority to Operate. Any engineering program or course shall be operated only upon an expressed provision of law, or with the proper authority issued pursuant to law by the Commission on Higher Education (CHED).
2. Advertisement. No announcement or advertisement shall be made of any engineering program or course until its authority to operate has been given by the CHED.

#### II - OBJECTIVES

1. General Objectives. Every engineering school shall define its mission orientation, goals and objectives along the following general objectives:
  - a. To produce graduates with the necessary theoretical knowledge of mathematics and natural sciences as well as the background knowledge needed by them to acquire the experience and practical skills required of professional engineers, and

- b. To educate students for their careers as engineers to enable them to contribute to the development effort of the country and qualify them for employment by providing them with both the theoretical and practical training in classroom and laboratory instruction coupled with such field experience as can be made available through a concerted effort by the engineering school.
2. Evidence of Achievement. Each engineering school shall provide evidence that objectives as provided herein are being carried out by the engineering program or course.

### III - PERSONNEL

1. Administration

- a. Qualifications. The administrators of engineering programs or courses shall be qualified to fill the positions assigned to them by having earned the appropriate degrees and credentials as required under existing rules issued by the Commission on Higher Education.
- b. Types. The school/college engineering shall have (1) a full-time dean, (2) a full-time department head in each curricular area on reduced teaching loads (no more than 80% of full-time teacher's teaching load), and (3) at least one full-time assistant dean, whenever needed, to adequately support the administrative functions of the dean.

A "full-time" dean is one whose services are available for the efficient administration of his school.

- c. Duties.
  - (1) All administrators shall provide leadership in curriculum development and coordinate curricular offerings, textbook adoption, evaluation procedures, methodologies of instruction, departmental activities and professional development for school personnel.
  - (2) Each administrator shall have a written job description pertinent to his individual responsibilities which are consistent with the actual demands of the job assigned to him.
  - (3) The dean shall have recommendatory responsibility for expenditures incurred by the school/college of engineering.

(4) The dean shall have recommendatory responsibility in the recruitment, placement and promotion of faculty members and other administrative staff in the college or department.

(5) The dean shall be involved in the budgeting, allocation and requisitions required by the institution for the school/college of engineering.

(6) The dean shall maintain or cause to be maintained a current collection of the equipment and materials catalogues whenever available.

d. Teaching Load. The assignment of the semestral teaching load of the deans and assistant deans shall be an internal policy of the school.

2. General Faculty

a. Hiring. The school/college of engineering shall have an established procedure for recruitment of new faculty members that shall involve the president, or his authorized representative, the dean(s) and department heads.

b. Qualifications.

(1) Only faculty members meeting both governmental and institutional standards or requirements shall be hired for any teaching position.

(2) At any given time, at least 10% of the faculty members of the school/college of engineering should be holders of the master's degree. As an alternative, the holders of the master's degree may be set at 5% provided that the other 5% of the faculty have had at least 10 years experience in teaching professional engineering subjects or 10 years of professional practice.

(3) The master's degree of each faculty member shall be either in engineering education, or in a field of engineering, physics, chemistry, mathematics or computer science.

c. Assignment. The teaching assignment and responsibility of each faculty member shall be limited only within the area of his specific training and/or professional experience. Faculties handling professional engineering subjects should be licensed engineers.

d. Duties.

- (1) It shall be the announced policy and practice of the school/college of engineering to require its faculty members to:
  - (a) *follow written course syllabi for each course;*
  - (b) *use library and audiovisual resources in teaching;*
  - (c) *participate in scheduled department meeting;*
  - (d) *encourage participation in professional engineering society meetings;*
  - (e) *administer frequent tests to evaluate student achievement; and*
  - (f) *follow the established grading system which should have been explained to the students at the beginning of each course.*
- (2) engineering to require its faculty members to:
- (3) Each faculty member shall hand out supportive information to all students enrolled in his class which shall include a learning guide, a schedule of class activities, periodic examinations, grading schedule, etc.

e. Evaluation.

- (1) The administration of each school/college of engineering shall have a defined set of procedures for improving the classroom performance of its faculty members.
- (2) The dean or his designate shall observe and evaluate the teaching capabilities of the faculty members at least once during every school year.

The evaluation shall include at least the following aspects:

- (a) actual observation of the teacher's performance in the classroom;
- (b) a written summary of the summary of the observation, a copy of which shall be provided the teacher; and

- (c) the set of evaluation criteria distributed to each faculty member at the start of the semester which shall include: subject-matter competence; suitability of examinations, assignments and levels of presentations; ability to identify and respond to student needs; punctuality and regularity of attendance and record keeping; rapport with students and other faculty; classroom and delivery, organizations and control; professional participation; availability to students; adherence to course syllabi, student-teacher course evaluations; a written evaluation reviewed by the teacher with the opportunity to file a response; and the right to appeal by the teacher.
- f. Advancement. Each faculty member shall be advanced in rank with the corresponding benefits on the basis of degrees earned, accumulated graduate credit hours, years of teaching experience and practical non-teaching work experience.

### 3. Full-Time Faculty

- a. Qualifications. Each full-time engineering faculty member shall be a holder of a baccalaureate degree either in mathematics, chemistry, physics, engineering or a related science. A faculty member without a master's degree shall be given a period not exceeding ten (10) years from the start of his teaching career, within which to earn a master's degree either in engineering education or in a field of engineering, physics, chemistry, mathematics or computer science; and provided further, that a full-time faculty member who has had at least ten (10) years of teaching experience engineering education and both consistent with excellent performance rating, may considered as having satisfied the equivalent master's degree for purposes of the grant of ranking and employment benefits as may be allowed under the school rules.
- b. Assignment. The semestral teaching load of a full-time faculty member shall be twenty-four (24) units. However, a faculty member with at least Above Average performance rating may be allowed a semestral teaching load of more than 24 units but not exceeding thirty (30) units, subject to the exercise of sound discretion by the school dean.

### 3. Part-time Faculty

- a. Qualifications
  - (1) A part-time engineering faculty member shall have at least a baccalaureate degree in either mathematics, chemistry, physics,

engineering or a related science and a minimum of one (1) year of non-teaching professional engineering work experience relevant to the course he is assigned to teach. Honor graduates of engineering schools may qualify as part-time instructors to teach non-professional engineering subjects.

- (2) It is highly preferable that a part-time faculty member shall likewise have earned a master's degree either in engineering education or in a field of engineering, physics, chemistry, mathematics, and computer science.
  - (3) For purposes of evaluation, a master's degree for the part-time faculty members, may be substituted by any of the following:
    - (a) an accumulation of thirty (30) graduate credit-units in the field of the instructor's teaching experience;
    - (b) an engineer's license plus fifteen (15) graduate credit-units in the field of the instructor's teaching experience; or
    - (c) an accumulation of five (5) years of professional engineering work experience outside of teaching.
- b. Duties. A part-time engineering faculty member shall attend school sponsored in-service training programs designed to encourage the use of effective teaching technique and to inform them of teaching resources available for classroom use before the end of the first month of their teaching assignment.
- c. Assignment.
- (1) A part-time engineering faculty member shall have a maximum teaching load of twelve (12) units.
  - (2) Each part-time engineering faculty member should have a schedule for student conference on campus.

## 5. Staff Development

### a. Programs

- (1) Each administrator and full-time engineering faculty member should be encouraged to participate in a school-approved program of professional development.

- (2) Every full-time engineering faculty member should be encouraged to attend professional meetings.
  - b. Leaves of Absence. A set of policy and procedures permitting every full-time engineering faculty member a leave of absence for professional development with or without pay, at the discretion of the administration, and provision to ensure that the faculty member shall be returned to at least his regular position at the end of the leave period shall be published or defined in the school rules.]
  - c. Financial Assistance. There shall be announced program of the school/college of engineering on the basis of its financial resources for full-time engineering faculty members to pursue advanced degrees or undertake graduate study and continuing education programs.
  - d. Contractual Terms. A full-time faculty member granted either a paid or unpaid leave of absence or provided assistance by the school in pursuit of graduate studies shall be governed by contract by and between the school and the faculty member concerned.
6. Support Staff
- a. Administrative. There shall be at least one (1) secretary for the office of the dean of engineering and an additional secretary or clerical assistance whenever applicable and necessary.
  - b. Faculty. The engineering faculty may request for secretarial services when needed. The services of student assistants may be allowed for this purpose.
7. Substitutes. Each school/college of engineering should have a system of providing suitable substitutes for faculty members who are absent from their regular teaching assignments.

#### IV - FACILITIES

1. General Standards.
  - a. Site. The site and size of the school/college of engineering should be adequate to meet the needs of its present population and future expansion.

b. Adherence to Codes

- (1) The physical plants of the school/college of engineering shall conform with all current Building Codes for electrical installation, plumbing, construction and health.
- (2) The presentation of the school's occupancy permit for a particular building shall be accepted as proof of compliance with requirements of the Building Code.

c. Health and Safety.

- (1) All classrooms and laboratories in the school/college of engineering shall be clean and properly maintained to meet public health and safety regulations.
- (2) Toilets shall be kept clean and properly maintained to meet public health and safety regulations, and shall be free of obnoxious odors.
- (3) Physical education and recreational areas shall conform with all rules and regulations pertaining to college campus site.
- (4) The capacity load of instructional rooms with an occupancy capacity of more than 50 students, where fixed seats are not installed, shall be posted in a conspicuous place, preferably near the main exit of the place.
- (5) All corridors shall be free of obstructions. Spaces under stairs shall not be used for storage of combustibles. All stairways shall have handrails and non-skid surfaces.
- (6) There shall be a working fire alarm system.
- (7) Each instructional space must be easily evacuated by all of its occupants within 60 seconds. All external and laboratory doors, except in corridors, shall open outward.
- (8) A new building shall be provided with a sprinkler system 45 meters (140 ft.) from an exterior exit door, a horizontal exit, exit passageway or an enclosed stairway, measured along the land of travel. If a completely automatic sprinkler system exists, the distance may be increased to 60 meters.

d. Acoustics. The sound levels inside the school facility should generally conform with standard building practices, as follows:



Maximum Sound Level in db

Use

50	Classrooms
80	Laboratories
56	Offices
42	Library

- e. Ventilation. The classrooms, libraries, laboratories, and offices must have adequate ventilation.
- f. Lighting. Illumination levels inside the school must be adequate and should conform with the existing code.
- g. Capacities. The classroom and laboratory facilities of the school/college should conform with the following requirements:

Number of People

Facility

1 student per sq. meter (10.76 ft. <sup>2</sup> ) of floor space	Classrooms
1 student per 2 sq. meter (21.52 ft. <sup>2</sup> ) of floor space	Laboratories

The classroom standard shall apply to instructional portions of laboratories and the laboratory standard shall apply to experimental areas only (exclusive of space occupied by equipment, laboratory benches and classroom areas in the laboratories).

- h. Electrical Services. The non-laboratory instructional space of the school/college shall be provided with an average of 10 watts/sq. meter of electrical power computed over the total of all such spaces.
- i. Custodial Support. Adequate custodial support services should be provided.
2. Non-Laboratory Instructional Space

a. Types

- (1) The school/college of engineering shall provide a variety of spaces, in addition to laboratory spaces, which can accommodate tutorial sessions.

- (2) A quiet and comfortable room for individualized instruction and counseling of students shall be provided.
  - (3) The instructional spaces need not be marked for specific purposes.
- b. Design. All instructional spaces for lecture, recitation, demonstration or tutorial purposes shall be provided with at least:
- (1) one (1) fixed chalkboard which shall extend at least 80% of the length of the wall on which it is placed and be at least one meter high;
  - (2) in new buildings, one functioning dual electric outlet for the use of audiovisual equipment;
  - (3) one comfortable seat with back support for each student; and
  - (4) one section of designated vertical space for posting of bulletins and announcement.

### 3. Laboratory Instruction

#### a. Faculty Requirement

- (1) Preferably, engineering laboratory subjects shall be taught by full-time instructors.
- (2) Student-teacher ratios in the individual laboratory sections shall not exceed 40:1; provided, however, that in the computation of this ratio, all laboratory technicians and assistants present in the laboratory in which each section is in session and who are assigned supervisory responsibilities over the students may be counted as "teachers" for purposes of this standard.

- b. Technician Requirement. There shall be one full-time laboratory technician or assistant per laboratory in chemistry, physics, mechanical power and hydraulics, chemical processes, surveying, materials and soil testing, machine shop, electrical power and electronics.

"Full-time" for laboratory technicians means at least six (6) hours of work for any individual laboratory, plus such other additional hours, as that laboratory may require in actual use.

- c. Equipment Requirement. There shall be sufficient functional equipment, apparatus, supplies, tools and other materials inside the engineering laboratories, in order to achieve the following objectives:
- (1) To allow every student to perform all the basic laboratory exercises called for in each laboratory course, as provided in the approved curricula of the engineering degree offered by the school; and
  - (2) To maintain a situation wherein no laboratory student work group shall exceed six (6) students working on the same laboratory equipment at the same time.
- d. Maintenance of Equipment.
- (1) Each school/college of engineering shall have an announced program for the regular preventive maintenance, repair and calibration of laboratory equipment.
  - (2) The said program shall have an adequate annual allocation in an amount to be determined by the school concerned.
  - (3) The school/college of engineering shall maintain a systematic record of repairs and expenditures incurred.
  - (4) The school/college of engineering shall make available additional funds necessary for emergency repairs of essential laboratory equipment to ensure the continuing operation of the instructional program of the laboratories.
- e. Modernization of Equipment. Each school/college of engineering shall have a program for the continuing modernization and upgrading of its instructional laboratories, facilities and equipment. The said program shall have an adequate annual allocation in accordance with the financial capability of the school.
- f. Calibration of Equipment.
- (1) Each school/college of engineering shall ensure that the measuring instruments in its laboratories are recalibrate regularly. The date of last calibration of a measuring instrument shall be indicated on each instrument.

- (2) The laboratory reference standards, if maintained by the school/college shall be kept separately from other laboratory instruments and kept in a suitably controlled environment.
- (3) The school/college of engineering shall ensure that all measuring instruments, especially universal and other testing machines and electrical instruments, if used for the purpose of providing a commercial service, such as testing concrete samples for contractors, shall be recalibrated to standard specifications at least once every calendar year.

In addition to other requirements, no such commercial service shall be provided unless the institution shall provide information to the person or firm requesting the service, the date on which the instrument used was last calibrated and the estimated margin of error of the measurement made with it:

- g. Inventory of Equipment. Each school/college of engineering shall maintain inventories or laboratory equipment, which shall be updated annually. The inventory shall contain the following information:
  - (1) name of the item;
  - (2) quantity on hand;
  - (3) operational status (operational, not operation, under repair, unrepairable);
  - (4) year of purchase; if known, and
  - (5) original purchase price, if known.
- h. Laboratory Safety. Each school/college of engineering shall have a program of laboratory safety, which shall include the following components and/or requirements:
  - (1) annual training program in laboratory safety for both the students and staff using or working in the laboratories and shops;
  - (2) secure, ventilated and separate storage of gas cylinders, radioactive materials, chemicals and flammables in closed containers properly shelved with restraining bars and labeled as hazards which would minimize unauthorized access to, breakage

- or tipping of, or damage from, such chemicals, flammables, radioactive materials and gas cylinders:
- (3) chemicals shall not be stored on floors but shall be shelved, nor shall any flammables be stored adjacent to stairways;
  - (4) provision for fire extinguishers of proper classification, as required by the Fire Code which shall be commercially inspected and recharged;
  - (5) provision for evacuation drills at least once per year to train students and staff in fire and earthquake evacuation procedures.
  - (6) provision for specific warning signs in laboratories where chemical or electrical or radiation experiments are performed or where machinery with moving parts is used along with the color coding of gas, steam, air and vacuum lines;
  - (7) availability of adequate ventilation for the removal of dust and chemical fumes in all laboratories and shops;
  - (8) laboratory aprons/gowns should be furnished and worn by students where appropriate;
  - (9) availability of impact resistance eye shields for every person in the shop area;
  - (10) eye protection shall be furnished to every person and shall be worn where grinding, milling, drilling, welding or boiling is taking place; and
  - (11) posting of safety rules and regulations and evacuation procedures in conspicuous places.
- i. Storage. There shall be an adequate storage room in the school/college of engineering to store or shelve all equipment, apparatus and supplies not in use.

#### 4. Office Space

- a. The school/college of engineering shall provide adequate office space for the administrators of the engineering program.
- b. The school/college of engineering shall provide and maintain Faculty Conference, Study and Planning rooms.

5. Engineering Library

- a. Status. In a multi-program school setting, the engineering library may be set-up and maintained as a part but separate and distinct unit or section within the institutions main library. Provided, however, that the engineering library shall be located within 200m (655 ft.) from each of the following:
- (1) the engineering laboratories;
  - (2) the majority of the engineering classrooms; and
  - (3) the engineering faculty offices.
- b. Capacity. The engineering library shall provide suitable chairs with back supports and tables or other flat writing surfaces which can seat 5% of the maximum school attendance of the engineering students at any one time with at least 0.64 m<sup>2</sup> space of floor area per reader.
- c. Design. the furniture and facilities of the engineering library shall be arranged to promote easy use and flow of traffic and all materials shall be arranged for quick and easy access by students.

There shall be a walk space of no less than 60 cm. (24 in.) behind each occupied chair in the engineering library.

A separate engineering library should be provided with an office for the librarians and staff, a control desk for checking out materials, shelf-space for all processed materials, a display space for bulletins, a storage for library supplies, an appropriate typewriter, at least one large English unabridged dictionary and stand, at least one English science and technology dictionary and stand, and at least one telephone if available in the locality.

- d. Personnel. The engineering library, if physically separate from the main library and has a reading capacity of more than 50, shall have one engineering head librarian with a degree in library science and adequate number assistant librarians who have had training in library work.

The librarians shall participate in engineering faculty meetings and shall serve on engineering faculty planning committees dealing with educational programs.

The librarians shall be encouraged to join librarian societies.

- e. Funding and Book Collection. The funding of the engineering library development program stated herein should allow the gradual attainment of

these goals thru the use of the engineering library fees collected. Library fees exclusive of salaries of library personnel should be allocated for the purpose indicated.

- (1) the library should have at least two (2) technical non-duplicate books with copyrights of less than ten (10) years old per technical subjects;
- (2) the library should have at least two (2) professional engineering non-duplicate books with copyrights of less than ten (10) years old for each course of the last (3) three years of each engineering curriculum in which a degree is offered;
- (3) copyrights of at least 50% of the professional engineering and another 50% of the other technical non-duplicate books shall not be more than 15 years old;
- (4) the library should have engineering and another technical handbooks; and
- (5) the library should be accessioning additional non-duplicate technical books at a rate of at least 0.1 book per full-time equivalent engineering student per year.

The engineering library fee should be spent exclusively for the purpose indicated herein. However, if the finance of the school warrants, an additional amount shall be allotted for its library development program.

f. Definitions

- (1) A "technical book" is defined as a book classified under one of the following Library of Congress headings:

Library of Congress Classification

GB	Physical Geography
GC	Oceanography
Q	Sciences (general)
QA	Mathematics
QB	Astronomy
QC	Physics
QD	Chemistry
QE	Geology
S (583-589)	Agricultural Chemistry and Chemistry

S (590-599)	Soils
S (605-623)	Land improvement, reclamation, irrigation
S (671-760)	Farm Machinery and Engineering
VG	Military Engineering
VM	Shipbuilding and Marine Engineering
T	Technology
TA	Engineering(general), Civil Engineering
TC	Hydraulic Engineering
TD	Sanitary and Municipal Engineering
TE	Roads and Pavements
TF	Railroad Engineering and Operation
TG	Bridges and Roofs
TH	Building Construction
TJ	Mechanical Engineering and Machinery
TK	Electrical Engineering and Industries
TL	Motor vehicles, Cycles, Aeronautics
TN	Mineral Industries, Mining and Metallurgy
TP	Chemical Technology

- (2) A "professional engineering book" is defined as a book classified under one of the headings T or TA through TP inclusive in the above list.
- (3) A "full-time equivalent engineering student"(FTE) for purposes of this section is defined as follows:

$$FTE = \frac{\sum_{i=1}^N (e_i c_i)}{21}$$

i = a math, engineering, chemistry or physics course

N = number of such courses offered during the semester

e = enrolment in course i

c = credit units designated to course i



Definition of full-time equivalent student includes only mathematics, engineering, chemistry or physics course enrolments.

- g. Periodical Collection. The library of each school/college of engineering should have a program for the acquisition and maintenance of at least two (2) periodical subscriptions to specialized engineering journals and one (1) general interest technical periodical subscription for each curricular area in engineering for which a degree is offered.

For every 1000 full-time equivalent engineering students beyond 2000, each of the above figures should be increased by 2 unless there are restrictions that prevent compliance.

h. Accessibility

- (1) Control. An effective control system for users of library materials should be established and maintained by the library staff. This control system however, should not restrict students' access to the library resources.
- (2) Card Catalogue. A card catalogue of engineering library resources should be maintained with author, title and subject cards for each title heading which should be updated annually along with both a current shelf list and accession records.
- (3) Periodicals. Current periodicals subscriptions along with an index of periodical available should be on display and readily accessible to students for browsing.
- (4) Physical. The library control system should include the following provisions:
  - (i) No more than 20% of the engineering library book collection should be on reserve at any one time.
  - (ii) No more than 40% of the engineering library book collection shall be caged, or behind locked doors or closed counters or otherwise inaccessible to student for browsing.
  - (iii) At least 60% of the engineering library book collection should be freely accessible to students for browsing, and the remainder available on call.

(iv) To eliminate pilferage from the library, the books or materials that the student should carry to or from the library may be monitored.

- i. Loan System. Books not on reserve should be allowed to be checked out by the students from the engineering library for at least one (1) class day with the opportunity for renewal following the said period.
- j. Inter-Library Cooperation. Cooperative relations, including inter-library loan services and inter-library accessibility of resources, with other libraries shall be established and maintained to augment and enhance the engineering library services.

The cooperative relations, with respect to subscriptions to special use or specialized technical journals, should include jointly planned purchases and the sharing of periodical resources among engineering libraries within a given locality, if feasible.

- k. Library Hours. The engineering library shall be open at least during the regular school days.
- l. Orientation of Students. There shall be a functional library orientation program for all new students at the start of each semester.
- m. Announcements. The library shall have a system of announcing all new acquisitions at least once every two months to all engineering faculty and students.
- n. Preservation of Resources. The library shall take measures for the preservation of periodicals and the refurbishing of books including moisture control, binding of periodicals and rebinding of worn books, pest control, proper shelving and storage, anti-theft practices, and availability of at cost copy services to reduce damages resulting from lost or torn pages.
- o. Storage.
  - (1) A readily accessible dead book storage, not taking up study space, shall be provided for seldom used books.
  - (2) At least  $5 \text{ m}^3$  ( $176 \text{ ft.}^3$ ) per 1000 books shall be provided for storage space in the library.

- p. Safety. There shall be one fire extinguisher per 200 m<sup>2</sup> (2150 ft.<sup>2</sup>) of library floor space or fraction thereof.

6. Audiovisual Facilities

a. Personnel

- (1) There shall be one full-time audiovisual technician or assistant for maintenance and distribution of audiovisual electro-mechanical equipment or fraction thereof. Electro-mechanical equipment includes projectors, audio-video players, amplifiers, TV monitors and similar major audio-visual equipment items.
- (2) There shall be one full-time audiovisual technician or assistant for audiovisual production and faculty assistance per 120 engineering faculty members or fraction thereof.
- (3) "Full-time" for audiovisual means that the required number of audiovisual technicians or assistants are present at all times when classes are being conducted on campus.

b. Equipment. The school/college of engineering shall have at least one of each type of the following AV equipment:

- (1) Overhead Projectors;
- (2) Projection Screens;
- (3) 35mm Slide Projectors;
- (4) Lettering/drafting set and table;
- (5) Mimeograph;
- (6) Video-tape Player with television monitor;
- (7) Xerox (or similar) duplicating machine; and
- (8) Replacement Bulb Stock.

c. Supplies. The school administration shall provide engineering faculty members with materials for the production of visual aids. This requirement should be a line item in the school budget, if the finances of the school warrant.

- d. Maintenance. All audiovisual equipment shall be maintained in good working order or shall be replaced if beyond repair.
- e. Staff Training. The school administration shall provide for all engineering faculty members at least an annual training program in the use audiovisual equipment and in the production of sample audiovisual instructional materials.
- f. Storage and Cataloguing. All audiovisual materials shall be stored, catalogued and classified.

## V - CURRICULUM

1. CHED Requirement
  - a. The curriculum of each engineering course that a school/college of engineering offers shall meet the minimum requirements set by the Commission on Higher Education. Any deviation from the prescribed requirements shall have the prior clearance or approval by the Department.
  - b. The example syllabi in the field of chemical, civil, computer, electrical, electronics and communication, geodetic, industrial, mechanical, metallurgical and mining engineering as provided by the Commission on Higher Education shall be observed by the faculty member in the corresponding courses as well as in such other curricula as may be authorized.
2. Basic Skills. If the circumstances of students and the school finances so warrant, the following remedial measures may be taken to improve basic skills:
  - a. The school may offer remedial courses in basic mathematics and English language skills.
  - b. Within each course syllabi there shall be some course components directed towards improving student proficiency in the skills of reading, writing and speaking technical English.
  - c. The requirement under (b) shall be applicable in every course in the engineering curricula.
3. Laboratory and Field Experience. The school/college of engineering shall ensure that:

- a. Each curriculum year includes at least one (1) science or engineering laboratory experience in school, or one (1) field visit to industry, or one (1) cooperative on-the-job training program experience, for all engineering students.
- b. All laboratory course activities shall involve the following:
  - (1) hands on manipulation of apparatus and equipment by each and every students;
  - (2) experimental procedures carried out by students which require the collection, reduction and analysis of data; and
  - (3) writing of individual report with emphasis on the development of skills in technical communication or the use of adequate oral substitutes to increase student proficiency in oral technical english.
4. Continuing Education. The school/college of engineering should make available its facilities to local industries for continuing education development programs for practicing engineers on current engineering technologies in each field of engineering for which it is authorized to operate.
5. Revisions. Each school/college of engineering shall have an on-going curriculum development and revision program, in each engineering field it offers, which should be realistic in scope and coordinated with its available laboratory facilities and equipment and with local needs.

## VI - SERVICES

1. Student Services. Each school/college of engineering shall provide and maintain the following student services programs:
  - a. Career Guidance and Testing Program;
  - b. Program of Student Admission;
  - c. Medical and Dental Care (diagnostic, first-aid, preventive) program;
  - d. Employment information Programs; and
  - e. Financial Assistance/Educational Loans and Scholarships Programs.

2. Guidance. The guidance program shall involve both initial and continuing evaluation of students' aptitude for engineering education, which may be conducted within the institution's overall guidance program. This should include the following:
  - a. students' orientation program;
  - b. placement testing;
  - c. psychological counseling; and
  - d. career choice assistance.
3. Job Placement. The school/college of engineering shall have an active and organized program of job placement for its students which shall include:
  - a. assistance in organizing student employer interviews;
  - b. maintenance of a job-available card file with and index of potential local employers;
  - c. willing assistance to employers; and
  - d. rapid transfer of students' academic transcripts to speed the employment process.
4. Co-curricular Activities. The school/college of engineering shall have student co-curricular engineering activities directed towards individual development and entrance into the profession.
5. Community Services. The administration of each school/college of engineering shall maintain close relations with local industries, professional societies and the general public for recruitment and placement of graduates as well as providing educational services to these groups.

## VII - PUBLICATIONS

1. Course Catalogue. The administration of each school/college of engineering shall publish a college course catalogue, which shall contain information that would fully inform the public of its policies, programs and procedures. Such a catalogue shall be updated at least once every five years.
2. Class Schedule. The school/college of engineering shall publish a schedule of classes for student and faculty use prior to the enrolment period of each semester.

3. Staff Handbook. The school/college of engineering shall provide all professional staff members with a handbook updated at least once every five (5) years containing the following:
  - a. employment requirements;
  - b. employment benefits (such as salary, rank, fringe benefits, etc.);
  - c. classrooms and laboratory teaching procedures and practice;
  - d. available teaching resources;
  - e. textbook selection procedures;
  - f. procurement policies and procedures;
  - g. promotion policies; and
  - h. evaluation policies and instruments.
4. Student Handbook. the administration of each school/college of engineering shall provide all students with a student handbook updated at least once every five (5) years containing the school policies and regulations pertaining to all students enrolled in engineering courses.
5. Laboratory Manuals. The institution shall have printed laboratory manuals available for loan to, or purchase by, all students in all engineering laboratory courses. The laboratory manuals shall include instructions for each experiment in the courses associated with the manuals, appropriate safety warnings placed immediately prior to whatever steps in the experimental procedures which may be hazardous, and procedures and equipment lists which match the actual equipment in the institution's laboratories in which the courses are conducted.
6. Faculty Roster. The administration of each school/college of engineering shall publish a current faculty directory or faculty roster.
7. Budget. The dean of engineering shall be provided with information as to the amount of funds for equipment maintenance and repair, and expendables and supplies allocated for the college.
8. Procurement. An established procedure for procuring new laboratory equipment, consumable supplies and teaching materials shall be published, distributed to faculty members and followed by all concerned.

9. Organizational Structure. There shall be a published organizational structure which specified the lines of organizational structure which specified the lines of authority and responsibilities among administrative personnel.
10. Policies and Regulations. Each engineering faculty member shall be provided with school policies and regulations updated at least once every five (5) years.
11. Long-Range Plan. There shall be a written long-range development plan for the school/college of engineering. Provided, however, that its implementation and use shall be dependent on the decision of the governing board of the school.

### VIII - RECORDS

1. Enrolment. A record system of student enrolment by engineering field of study and enrolments for all class and laboratory courses shall be maintained by the institution's administrative office.
2. Achievement. A permanent record system of student grades shall be maintained.

### IX - ACADEMIC STANDARDS

1. Admission. The administration of each school/college of engineering shall require all students to meet the following entrance standards:
  - a. All students shall pass an engineering aptitude exam administered by the school/college of engineering before being admitted to an engineering program; and
  - b. The school shall have established minimum standards for aptitude test scores for students enrolled in any engineering program.
2. Graduation. Each student shall satisfy all requirements for graduation as provided by existing school and CHED rules and standards before being awarded a degree in a specific field of engineering education program.

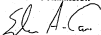


**X - NON-COMPLIANCE TO STANDARDS**

1. Issuance of Renewal Permit. Upon denial of applications for recognition or for additional year level(s) due to non-compliance with the requirements, renewal permit may be issued for one (1) academic year only.
2. Recognized/ Unrecognized Engineering Programs. The curricular guidelines under CMO 49 s. 1997 shall be observed in the implementation of the requirements for recognized and unrecognized Engineering program.

Pasig City, Philippines, October 15, 2001

For the Commission



**ESTER A. GARCIA**  
Chairperson